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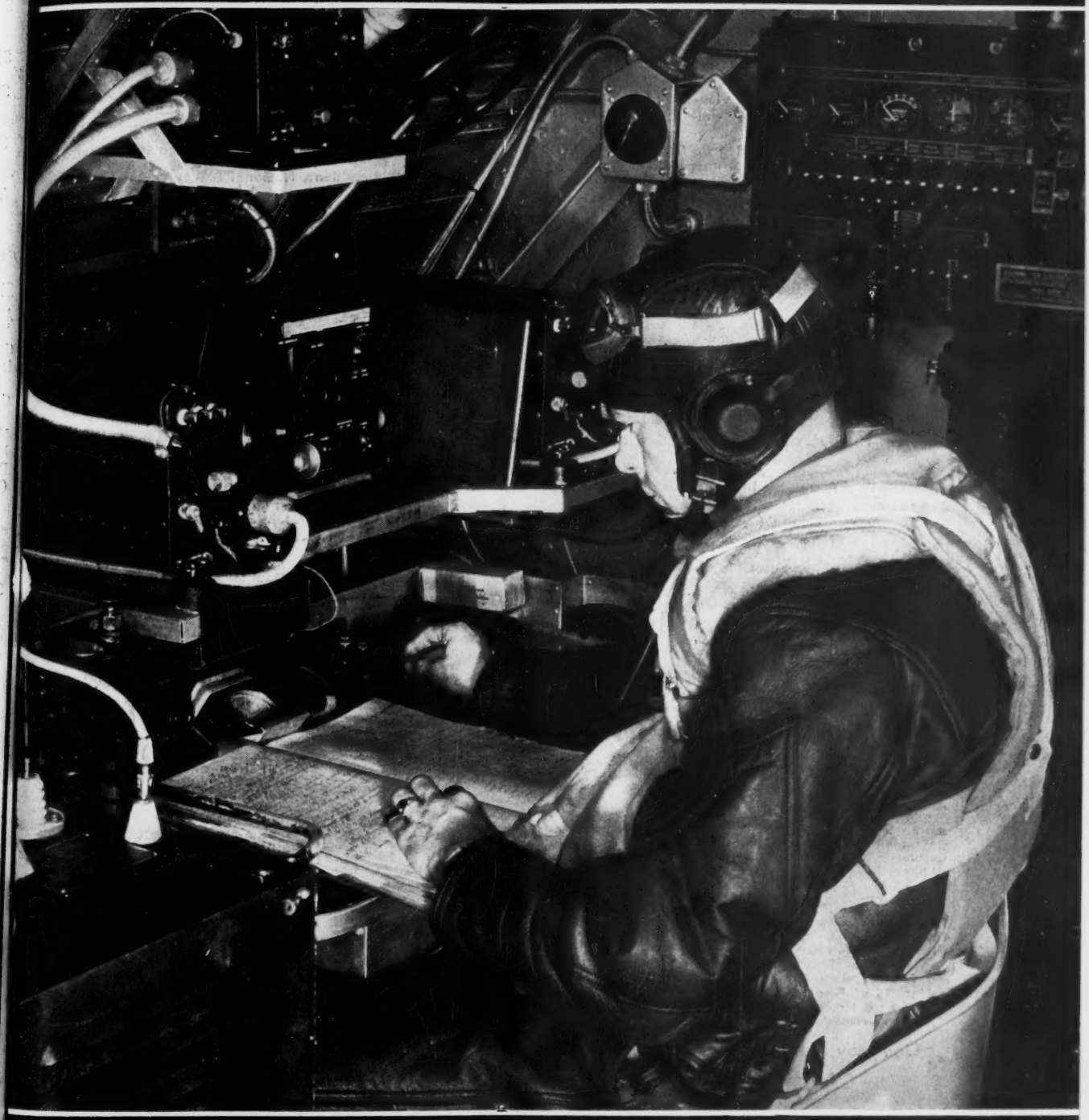
Standardization

nd Commercial Standards Monthly



December

New Mica Capacitor Standard
First War Standard on Radio
(See Article on Page 297)

1942

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Industrial
Standardization
And Commercial Standards Monthly

Published Monthly by
American Standards Association
29 West 39th Street, New York, N. Y.
with the cooperation of the National Bureau of Standards
RUTH E. MASON, Editor

Our Front Cover: A radio operator aboard a Navy bomber. Standards for radio components are particularly important for radios used by the services since equipment must be tailored to fit such limited space, and must meet grueling service conditions. Official U. S. Navy Photograph.

This Issue

ASA

Reg. in U.S. Pat. Off.

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

Subscription price $4.00 per year (foreign $5.00); Special to schools and libraries $2.00 (foreign $3.00); single copies 35 cents

December, 1942 Vol. 13, No. 11

Entered as Second Class Matter February 14, 1941, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

N. Y. Daily

Rough mica from the mine must be split into thin films and graded before it can be manufactured into radio capacitors. Cheap native labor for these operations has given India its world-wide domination of the business and left all other countries without the necessary skills to process the output of their own mines. These blind workers, with their highly developed sense of touch, are the nucleus of an important industry and are production soldiers on a new front. They are splitting mica into films as thin as a thousandth of an inch.

Mica Capacitor Standard First American War Standard on Radio

by H. P. Westman

Secretary, ASA Sectional Committee on Radio

INTERCHANGEABILITY in ultimate-consumer life is primarily a convenience; in manufacturing it is an economy, profit maker, and guarantor of continued producing; but in the Armed Services it may be the difference between victory and defeat. Because of this, a short time after Pearl Harbor, a comprehensive program of standardization of components for radio equipment[1] was set up in the American Standards Association—for this is a global and mechanized conflict and rapid communication is playing a role far exceeding that ever encountered before in war.

During peacetime, our Air Corps, Army, Coast Guard, Marine Corps, Navy, and other services purchase radio equipment to their individual specifications. Their requirements are not identical and their designers have, in many instances, different views as to how the service conditions may best be met. Consequently, the requirements to which the individual services order radio transmitters and receivers may differ quite substantially.

Progress in the development of new designs, both of components and complete equipments, is another sound reason for different purchase specifications. If the customer never asks for a better product, the manufacturer has little stimulus to produce one. Progress being essential, change must not only be tolerated but welcomed.

Equipment in the Field Is Gage of Success

Wartime brings a new picture. The period of design and redesign must give way to the need for production and more production. Equipment in the field is the significant gage of the war effort. The development of new equipment cannot be mixed casually with production as is done in peacetime. A "perfect" design on the drawing board helps not at all in winning that day's battle.

In the plan of the War Committee on Radio,[2] fixed mica-dielectric capacitors were chosen as the initial and experimental project. The object was to prepare a purchase specification which could be approved by all branches of the Services, which would permit a single design to meet all requirements, and which would permit interchangeability in manufacture and in service.

At first thought, one would expect the Services to encounter different conditions under which their equipment would have to operate. This is true to only a limited extent if we agree that components will not be fabricated for use in a particular part of the world but will be manufactured broadly for one specific branch of the armed services. In this global conflict, no branch of the services stays home.

Meets High Requirements of Air Service

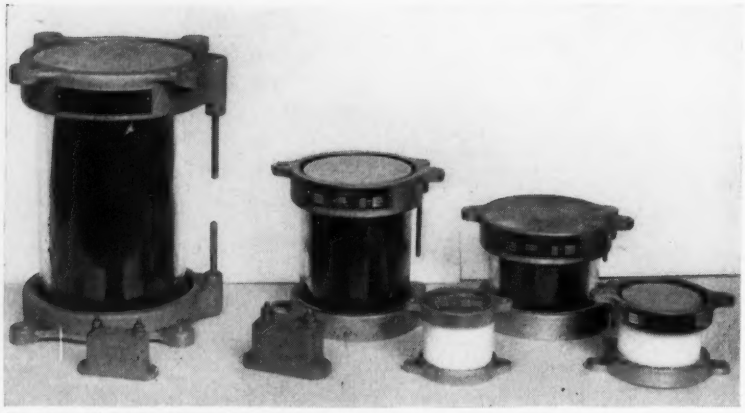
Only air-borne equipment meets a special requirement not faced by that which operates on the surface of the earth. At reduced air pressure, such as is encountered at high altitudes, and under rapidly varying temperature which occurs during fast climbs and dives, additional stresses are placed on radio components. Fortunately, fixed mica-dielectric capacitors can be designed to meet these extra requirements at no great additional cost in time and materials over that for "non-flying" use.

The standard on fixed mica-dielectric capacitors, which was approved by the American Standards Association on November 12, 1942, reduces the number of designs from many hundreds to 22 physical sizes. These cover the entire range used in both receivers and transmitters.[3]

[1] "War Standards for Military Radio", by S. K. Wolf; INDUSTRIAL STANDARDIZATION, September, 1942.

[2] The War Standards project on Military Radio is being carried out by the ASA with the cooperation of the Army, the Navy, the Institute of Radio Engineers, the War Production Board, prime contractors, and component manufacturers.

[3] Copies of the American War Standard for Fixed Mica-Dielectric Capacitors (C75.3-1942) are available from the ASA at 50 cents each.



Courtesy RCA Manufacturing Company

For transmitting purposes, these capacitors are standard.

The largest unit is ten inches high, weighs 24 pounds, and will operate at 35,000 volts. The rods at the side form a spark gap to protect the capacitor from the effects of excessive voltage.

Capacitance values in a given size of case have been established on the basis of preferred numbers, and sizes which are uneconomical to make in regard to wasteage of material or labor have been discontinued. The manufacture of a relatively small capacitance unit in a case of large physical size has also been stopped as being uneconomical of material.

New Designation Makes Ordering Easy

A new type designation which identifies by means of nine letters and figures the electrical and mechanical characteristics of each capacitor will permit a unit to be ordered easily by telegraph. As all Services will use the same type number, an army radio operator on Guadalcanal should have no doubts about a capacitor he may borrow from a battleship to replace one damaged in service.

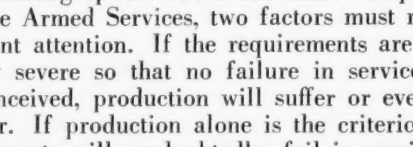
Some of these capacitors are too small to provide space for the type number and, in addition, the branding operation would change their values because of the thinness of the layer of molding material which covers the stack of mica and foil. These are identified by six colored dots which are applied by machine at the time of manufacture.

The new standard prescribes a series of tests to prove the effectiveness of a design under war service conditions. However, it goes considerably beyond this in that it outlines the tests which must be made in production on all manufactured units and also provides for sampling tests which will disclose any serious reduction in the quality of the materials or workmanship going into the capacitors.

Another problem which is being encountered these days is difficulty in obtaining competent engineering personnel for inspecting components to see that they are within the limits set up in the purchase specifications. The present trend is to employ girls with high-school educations and give them a short course on the inspection of specific components. This requires that specifications be written particularly clearly with a minimum of engineering terms and with no formulas or conversion factors to be interpreted. The new standard employs only one simple graph which can be mastered with only brief instructions. It includes no formulas and, in many places, instructions are in tabular form for a rapid and unambiguous understanding. All temperatures are expressed in both Centigrade and Fahrenheit so any thermometer will be satisfactory. Judgment on the part of the inspector is not required and, wherever a failure to pass a requirement is encountered, the inspector has definite instructions as to his or her procedure.

In writing specifications for radio components for the Armed Services, two factors must receive constant attention. If the requirements are made overly severe so that no failure in service may be conceived, production will suffer or even disappear. If production alone is the criterion, the components will, undoubtedly, fail in service. A balance between these extremes must be reached.

In peacetime, we habitually think of the value of a component in terms of dollars and cents. This must not continue in wartime for, like the horseshoe nail, the failure of the smallest and least expensive component may contribute to the loss of a bomber, tank, ship, or battle—every one of which involves the lives of trained men, on which no price can ever be placed.



Courtesy Cornell-Dubelier Electric Corp.

These standard capacitors are used for receivers and low-power transmitters.

The smallest unit is less than an inch long, weighs only a tenth of an ounce, and operates at 500 volts.

The ASA War Standards Committee on Military Radio has set up 13 subcommittees covering the essential components required for reliable performance of radio under service conditions. Each subcommittee has assigned work on specific types of equipment to smaller task groups. These subcommittees and their task groups are.

1 and 2. Insulating Materials
- (*a*) Ceramics
- (*b*) Steatite
- (*c*) Porcelain
- (*d*) Glass
- (*e*) Glass-Bonded-Mica
- (*f*) Treating, Filling and Impregnating
- (*g*) Plastics
- (*h*) Plastic Communications Components

3. Capacitors—Fixed
- (*a*) Ceramic Dielectric
- (*b*) Paper Dielectric
- (*c*) Electrolytic

4. Capacitors—Variable
- (*a*) Receiver
- (*b*) Transmitter
- (*c*) Trimmer

5. Dynamotors and Similar Power Units

6. Crystals and Holders
- (*a*) Physical Characteristics
- (*b*) Specifications and Testing
- (*c*) Reference Test Circuits

7. Resistors—Fixed
- (*a*) Composition
- (*b*) Wire Wound
- (*c*) Instrument Type

8. Resistors—Variable
- (*a*) Composition
- (*b*) Wire Wound

9. Transformers
- (*a*) Power
- (*b*) Audio Frequency
- (*c*) Radio Frequency

10. Tube Sockets
- (*a*) Receiving
- (*b*) Transmitting
- (*c*) Cathode Ray

11. Connectors
- (*a*) Telephone Plugs and Jacks
- (*b*) Multicontact Plugs and Receptacles

12. Dry Batteries
- (*a*) Single Cell
- (*b*) Multicell

13. Vibrator Power Supplies

OCS Takes "First Step" In Byrnes' Simplification Program

The Office of Civilian Supply, WPB, has begun a survey to determine what simplifications of consumer goods have taken place since the outbreak of the war, it was announced recently by Joseph L. Weiner, Director of Civilian Supply.

The survey is headed by Irvin O. Wolf, a consultant to Mr. Weiner and a member of Civilian Supply's Inventory Control Committee. WPB industry divisions and industry itself will cooperate in the survey.

Mr. Weiner said that this is "a first step" in carrying out a request made recently by James F. Byrnes, Director of Economic Stabilization, that WPB undertake a vigorous program of simplification and standardization of consumer goods, not merely to eliminate frills and wasteful practices, but wherever necessary and advantageous to concentrate on the production of relatively few types of goods of standardized quality, design, and price.

"The survey will show what progress has been made so far, both on a voluntary basis and through WPB orders, in simplifying consumer goods," Mr. Weiner said. "When we have that picture before us, we will be in a position to take whatever additional steps will be necessary to achieve the program Mr. Byrnes has asked WPB to carry out."

Mr. Weiner thought the survey would require about three weeks.

English-Standard Spanish Dictionary Gives Vocabulary of Technical Terms

Nuevo Diccionario Técnico Comercial, Español-Inglés (*New Commercial Technical Dictionary, English-Spanish*), ed. by Antonio P. Guerrero (Chemical Publishing Co., Inc., 234 King Street, Brooklyn, New York, $10).

An up-to-date compilation of terms used in electrical, mechanical, chemical, and marine engineering; in radio, mining, textile, and other industries; in aviation and modern mechanized warfare; in shipping and international trade.

This reference work, edited by a Spanish Industrial engineer, is an indispensable aid to exporters, technicians, and engineers who do business with the other American republics. It has been carefully checked not only against other dictionaries and scientific publications, but by technical experts of the United States, the other American republics, and Spain, and is probably the most complete work of its kind.

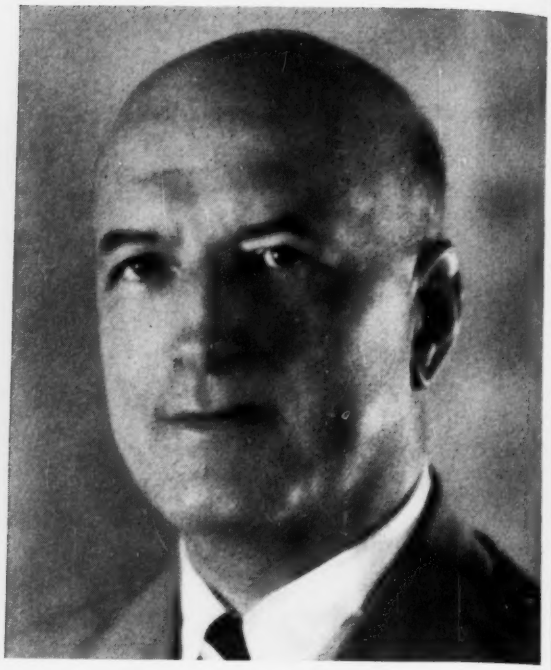
This dictionary is an attempt to establish a standard vocabulary for all technical and commercial terms. It is interesting to note that the United States, because of the large amounts of industrial equipment and the many products it has sent to Latin American countries, has exerted a tremendous influence on the technical vocabulary of the other American republics. Many of our technical terms have been adopted, or translated into Spanish, and form part of the generally accepted technical vocabulary in Latin American countries.

Cyrus Townsend Brady, Jr.

Mr. Brady, who has just been appointed the ASA's field representative in Latin America, is a graduate of Harvard University (Civil Engineering degree). He worked for a while in the Philippine Islands Irrigation Service and in the United States. In 1914 he went to Argentina as Engineer of the Argentine Government Irrigation Department, and since 1915 has been representative of the U. S. Steel Export Company in Argentina.

Mr. Brady has been President of the American Society of the River Plate (1924), of the U. S. Chamber of Commerce in Argentina (1928), and of the American Club in Buenos Aires (1936). He is now a member of the Centro Argentino de Ingenieros (Engineers' Club of Argentina), IRAM (Argentine Standards Institute), ICANA (Argentine-North American Cultural Institute), and of the American Geographical Society and India House in New York.

Mr. Brady has travelled in Europe and the Near East, as well as throughout Latin America. He speaks fluent Spanish, as well as French, Portuguese, and Italian.



Alberto Magno-Rodrigues

Mr. Rodrigues, who will be in charge of the Inter-American work in the New York office of the ASA, was born in Porto, Portugal. He spent the earlier years of his life in Portuguese East Africa and British South Africa.

In Portugal, where he returned at the end of the first World War, he was a partner in the firm of Monteiro Gomes Limitada, which acted *inter alia* as distributors for the American manufacturers of Caterpillar Tractors and other agricultural, roadbuilding, and earthmoving machinery.

Appointed exclusive dealer of the Caterpillar Tractor Company and various other American manufacturers of allied equipment in Spain, Spanish Morocco, and Spanish Guinea, he has been engaged uninterruptedly in these activities from 1926 to 1941, when he came to the United States.

He was President of International Rotary Club in Sevilla, Spain (1932-1933) and honorary vice-consul for Portugal in the same city from 1936 to 1939.

Mr. Rodrigues, apart from Spanish and Portuguese, speaks fluent English and French.

Society Recommends Good Lighting for Offices

In the September issue of *Illuminating Engineering* appears the new Recommended Practice of Office Lighting, promulgated by the Illuminating Engineering Society.

Such topics as glare, natural lighting, artificial lighting, wiring, and machinery are covered, and many pictures and charts illustrate the recommended practices.

ASA Sets Up Inter-American Department

THE increasingly close commercial relations between the United States and the countries of Latin America, and growing interest in industrial standardization in these countries, have now brought about a new set-up in the American Standards Association for inter-American cooperation. The Inter-American Department of the ASA was officially organized December 1 with Cyrus T. Brady as field representative in Latin America and Alberto Magno-Rodrigues in charge of the work in the New York office.

Mr. Brady, an engineer and sales executive who has spent many years in South America, has been given a year's leave of absence by the U. S. Steel Export Company for the purpose of heading up the ASA's program in Latin America.

Will Exchange Technical Data

The new program includes the exchange of technical data on the development and use of standards with government, engineering, and industrial groups, and with technical journals in the other American republics. Through the new Department the ASA will provide Latin American countries with Spanish and Portuguese translations of standards which may be especially helpful in developing their industries.

The ASA is being guided in its new work by an Advisory Committee of men who have had long experience in Latin-American cooperation, working under the chairmanship of R. E. Zimmerman, president of the ASA and vice-president of the U. S. Steel Corporation.

National Standardizing Bodies in South America

Interest in standardization has been steadily increasing in Latin America during the past few years. Full-fledged national standardizing bodies are now in operation in three South American countries. In Argentina, the Instituto Argentino de Racionalizacion de Materiales has been operating since 1935 and publishes a monthly magazine. The organization in Brazil (Associacao Brasileira de Normas Tecnicas has recently issued a volume of standards. In Uruguay, the Instituto Uruguayo de Normas Tecnicas was formed a short time ago. Government departments and engineering societies are doing similar work in other Latin American countries; and a South American committee on standards (Comite Sudamericano de Normas) is furthering standardization work in the ten South American republics.

This increasing concern with standardization, and the close industrial relationships which are accentuated by the requirements of the war, have highlighted the need for translation of specifications into Spanish and Portuguese. This need is being felt particularly by American exporting firms in their Latin American markets. The National Electrical Manufacturers Association, for example, recently called the attention of the American Standards Association to a group of American Standards in the electrical field which would be useful to their members in the development of their foreign trade.

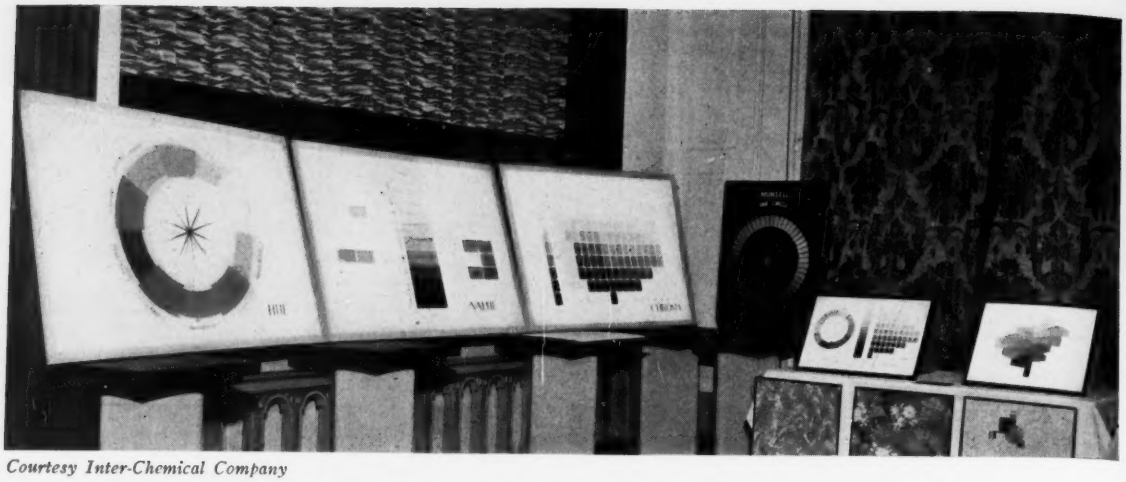
British and Germans Active in South America

The British and the Germans have always done a great deal more in this type of work in South America than has been done by this country. The British Standards Institution is even now working on a technical handbook in Spanish to tell prospective purchasers in South America what British industry has to offer.

Mr. Brady is starting his standardization work with visits to a number of Latin American countries during which he will make a preliminary survey of standardization problems. As part of his trip he will include a visit to New York in January for consultation with the home office, the ASA Advisory Committee on Inter-American Cooperation, and with industrial groups having commercial or industrial relations with the Latin-American countries.

The Advisory Committee on Inter-American Cooperation which is helping to guide the American Standards Association in its new inter-American program is made up of the following members:

R. E. Zimmerman, vice-president, U. S. Steel Corporation; ASA president, *Chairman*
Dr. Lyman J. Briggs, director, National Bureau of Standards
E. F. Callahan, vice-president, International General Electric Company
Dr. Alexander V. Dye, economic consultant, National Foreign Trade Council
H. Greenwood, vice-president, U. S. Steel Export Company
T. W. Howard, Department of Manufacture, U. S. Chamber of Commerce
C. L. Warwick, secretary-treasurer, American Society for Testing Materials
John W. White, vice-president, Westinghouse Electric International Company
Carroll L. Wilson, director, Bureau of Foreign & Domestic Commerce
J. T. Wilson, president, Export Managers Club



Courtesy Inter-Chemical Company

The Munsell system offers visual color charts which have been calibrated by means of the spectrophotometer. Hue, value, and chroma are the three "dimensions" which determine the colors in the Munsell system.

War Standard Coordinates Systems For Specifying and Describing Color

Spectrophotometer and Munsell system are recognized as standards for color control

A NEW color standard which is expected to eliminate much of the existing confusion in matching colors was explained and demonstrated at a conference November 30 under the auspices of the American Standards Association. The conference was attended by the press and by leaders representing a broad cross section of the industries in which color is an important factor.

The objective of the new American War Standard, Specification and Description of Color, is to reduce to a common language the results of years of technical developments in the measurement of color, so that color can be specified in terms that mean the same to the engraver, to the ink, die, and paint maker, the industrial finisher, the chemist, the printer, the paper and textile manufacturer, and to others interested in color.

Provides Color Language

During the last few years an accurate language has been available in terms of the physicist but only a relatively small group working in the field of color measurement was familiar with it. The new standard provides a language by which color may be described by means of three basic elements—either by using the physicist's "dominant wave length," "brightness," and "purity"—or by using the psychologist's "hue," "value," and "chroma." And the standard makes it possible for us to translate from one system to the other at will.

Spectrophotometer Is Basis

For the new color language, the Standard recognizes the spectrophotometer as the basic instrument for the standardization of color, and the use of material standards (color samples) for the popular identification of color. The spectrophotometer, an instrument of which there are several types, analyzes the color in terms of the percentage of light reflected or transmitted by the color.

Relative to the use of material standards, the new standard states that "The only system of material standards that has been calibrated in terms of the basic specification is represented by the 1929 edition of the Munsell Book of Color, which contains a readily comprehensible system of color samples. The use of this book is recommended wherever applicable to the specification of the color of surfaces. Approximate identification of Munsell hue, value and chroma may be obtained by direct visual comparison with the samples in this Book of Color."

The approved standard thus provides two standards: a fundamental or primary standard, in terms of which any system of color samples can be calibrated; and a secondary or working standard consisting of a series of color samples that have already been calibrated in terms of a fundamental standards, *viz*, the samples in the 1929 Munsell Book of Color.

Three Numbers Identify Color

Either of these two standards makes it possible to identify a color, or to compare two colors, by telegraph, by sending three numbers.

The fundamental standard has the great advantage that it is reproducible at any time and is in nowise dependent upon the permanence of any physical sample. It can thus be used to determine whether a physical sample changes with time. In fact it would make it possible to reproduce any physical sample accidentally destroyed.

The approval of the 1929 Munsell Book of Color as a part of this American War Standard in nowise prevents the approval, as a part of an American Standard system of color, of any other series of color samples that may in the future be calibrated in terms of the fundamental standard. It merely happens that it is the only system that has, as yet, been so calibrated. In fact the calibration of the widely used series of color cards of the Textile Color Card Association in terms of the fundamental color standard is now being put into operation.

The wide adoption and use of the new color specification standard will put color specification on a more scientific and practical basis. It should help eliminate much of the confusion now present in color specification not only for war products but for peacetime products as well.

Aircraft Colors Difficult to Match

For example, in the aircraft plywood program today a prime contractor may have as many as fifty sub-contractors building wing and tail parts, complete wings, fuselages, etc. Most of these call for camouflage green which is a grayish olive drab, a difficult color to match so that it will be the same under all light.

Color chips used by sub-contractors to arrive at this color may vary widely because of deterioration or because the chips were furnished from the standards of different manufacturers. Thus, when the different parts are assembled, there may be a wide variance in color, thus causing a loss of production time if government specifications are to be met.

This same condition applies in industry generally, where an equipment is built by one manufacturer to be integrated with another manufacturer's equipment. There have been many instances where the equipment would have to be refinished so that the color variance would not be noticeable.

The use of the new standard provides a standard specification for all suppliers to meet, thus assuring that parts are of uniform color when assembled.

Color standardization is important in assuring that the color of different batches of equipment or commodities is uniform. A batch might pass visual inspection yet not be uniform in color under all conditions. The variance might not be apparent until units of the different batches are placed alongside each other.

In filling an order in which the spectrophotometric specification is given, the trained colorist will know at once by the monochromatic data the nature of the color required. The finished material will then be checked on the spectrophotometer to match exactly within the given tolerances of the specification.

Refer to 1929 Munsell Color Book

In applying the new standard to fill an order in which the Munsell notation is given, reference is made by the supplier to the 1929 edition of the Munsell Color Book. He will then match the visual sample indicated. If the specification is given in a Munsell specification not in the 1929 Book, it may be found among the interpolated curves published by the United States Department of Agriculture and in the report of the subcommittee of the Optical Society of America published in the journal of the Society.

In some cases a color name rather than a number is needed to identify a color. This can be

Courtesy General Electric

The spectrophotometer, by means of which color is measured and analyzed in terms of light waves.

Color Standard Interests Army

The new War Standard for Specification and Description of Color is of interest to the Army in the control of the color of uniforms and other equipment for the protection of the soldiers, Lieutenant Colonel Frank M. Steadman told the conference on color November 30. Colonel Steadman is with the Quartermaster Depot in Philadelphia.

He said:

"Our colors are very limited in range, designed to give a maximum of invisibility for the protection of the wearer. One of our difficulties in procurement, however, has been a lack of adequate color specification. We have had to use actual samples of the fabrics for the guidance of the producers of fabrics for uniforms, which means, for instance on one item only, the more than 100 producers from whom we have been receiving shirtings. However, eventually, we are hoping to be able to standardize and control our standards for shade by the methods you have set up, using the spectrophotometer for recording our standard colors after they have been selected by eye. By such a method we can be sure that we are still holding to the absolute standard which we establish."

done by using the ISCC-NBS system which is based on the Munsell system. It gives 300 and more common color names, selected and defined by means of ranges of the Munsell hue, value, and chroma. The plan of this system was developed by the Inter-Society Color Council, an organization centered around 13 national societies interested in color. The details of the system were worked out at the National Bureau of Standards. The names are simple color names like light green, deep red, and dark brown. To each of such names is assigned, not one single color, but a considerable range of color which accords with its accepted meaning.

How American Flag Red Is Determined

The ISCC-NBS name for the standard red of the American flag, for example, would be determined as follows: First, the red in the Munsell color book which corresponds visually to the red in the flag is found. This is Munsell 5 red, 3 value, 14 chroma, written 5R 3/14. The name charts then show that Munsell 5R 3/14 falls within the color range designated *vivid red*. This designation, vivid red, is not exclusive enough for a purchase specification. There are other vivid reds which differ too much from the red of the flag to be acceptable. But the designation, vivid red, gives a fairly graphic idea of the kind of color it is. Although this system is not precise enough for purchase specifications, and is too precise for ordinary conversation or for use in sales promotion, it is being used for the description of drugs and chemicals, and is being introduced into the standard reference books for pharmacists. It is also being used by the U. S. Department of Agriculture for the description of soils, and by the National Bureau of Standards for certain kinds of building stone. It has been recommended for chemistry textbooks on qualitative analysis; and, in short, is useful "wherever general comprehensibility is desired and precision is not important."

Sponsored by General Electric and Interchemical

The request for approval of the standard for specification and description of color was sponsored jointly by the General Electric Company and the Interchemical Corporation. Both of these companies have devoted a great deal of attention to fundamentals of this standard over a period of years. General Electric pioneered in marketing a commercial model of a recording spectrophotometer invented by Dr. Arthur C. Hardy of the Massachusetts Institute of Technology. This instrument measures color in terms of the wave lengths of the spectral colors. The Interchemical Corporation has pioneered in the use of the recording spectrophotometer to establish color standards for inks, pigments, paints, lacquers, enamels, and other protective and decorative finishes. In 1935 Interchemical published "Three Monographs on Color" which presented the results of a study of color.

During the process of approval of the standard by the American Standards Association the following indicated their approval of the standard:

Agfa Ansco
All Color Company
American Assn. of Textile Chemists and Colorists
American Ceramic Society
American Society for Testing Materials
Assn. of Am. Railroads (Signal Section)
Bausch and Lomb Optical Co.
Congoleum-Nairn, Inc.
Corning Glass Works
Dow Chemical Company
Eastman Kodak Company
Electrical Testing Laboratories
General Electric Company
The Glidden Company
Illuminating Engineering Society
Interchemical Corporation
Inter-Society Color Council
Limited Price Variety Stores Assn.
Mail Order Assn. of America
Munsell Color Company
National Bureau of Standards
Nat. Electrical Mfrs. Assn.
Nat. Formulary of the American Pharmaceutical Assn.
Office of Production Management
Optical Society of America
RCA Manufacturing Company
Alexander Smith & Sons Co.
Technicolor Motion Picture Corp.
U. S. Bureau of Printing and Engraving
U. S. Department of Agriculture
U. S. Navy Department
U. S. Pharmacopoeial Convention
Westinghouse Electric and Mfg. Co.

The standard is being used by the National Bureau of Standards and the Department of Agriculture in their regular testing work.

The conference at which the color standard was demonstrated was presided over by R. E. Zimmerman, vice-president of the United States Steel Corporation and president of the American Standards Association. Speakers on the program were Dr. Arthur C. Hardy, Professor of Optics at the Massachusetts Institute of Technology; Dr. Deane B. Judd, National Bureau of Standards; Dr. Loyd Jones of Eastman Kodak Company; Lt. Col. Frank F. Steadman of the Quartermaster Depot in Philadelphia; A. Wallace Chauncey, vice-president, Interchemical Company; and E. S. Lee, Director of General Engineering Laboratories, General Electric Company.

In connection with the luncheon there was a color exhibit to illustrate how many industrial organizations are now using the standard. A General Electric Recording Spectrophotometer was in operation. The exhibits also showed the application of both spectrophotometry and the Munsell notation. A motion picture was shown which graphically illustrated the fundamentals of color analysis in layman's language.

New OPA Price Policy Makes Grade-Labeling Mandatory

The Office of Price Administration's new dollars-and-cents ceiling prices which are now replacing the "freeze" type of price control will bring mandatory grading and grade-labeling, A. C. Hoffman, director of the food price division, OPA, told the Grocery Manufacturers of America November 20.

"In the case of products for which satisfactory government grades exist, we will use the official specifications and incorporate them into [price] schedules," he said. "Existing schedules for beef, dry beans, potatoes, onions, and turkeys already embody government grades."

"So as to identify the product, prevent upgrading, and make price control enforceable, the grade labels will have to be put on the product or container," Mr. Hoffman declared. "So long as we use the government grade specifications it will be largely a matter of indifference whether trade terminology for these grades, such as standard, choice, and fancy, or the government terminology, such as A, B, and C, is stamped on the product."

Where government graders are not available to do the grading, Mr. Hoffman explained, the processor will have to do his own grading according to the government grade specifications and stamp his products "at his own peril" in the sense that it will be up to the processor to see that they are properly graded.

"I can assure you that grade labeling and flat pricing are being used solely in the interest of equitable, effective, and enforceable price control, and for no other purpose," Mr. Hoffman declared.

Coonley to Coordinate Standards Work of WPB

A reorganization of the WPB Conservation Division has just been completed to coordinate more closely the work on standards and simplification, specifications, and substitution. In order to carry out such a program Howard Coonley, formerly head of the Simplification Branch, has been named Deputy Director for Conservation. The three branches of the Division dealing with simplification, specifications, and substitution will report directly to Mr. Coonley, while the four salvage branches will continue to report to Paul C. Cabot, Deputy Director for Salvage.

R. B. Shepard, formerly deputy chief of the Simplification Branch, replaces Mr. Coonley as Chief of the Branch. C. L. Warwick heads the Specifications Branch; and Harvey A. Anderson is chief of the Conservation and Substitution Branch.

New Foreign Standards Now in ASA Library

Argentina

IRAM 501P Definición y designación de los productos siderúrgicos principales
IRAM 502P Acero laminado en barras, de sección circular, para hormigón armado
IRAM 506P Ensayo de roblones
IRAM 512P Acero laminado en barras, de sección circular, para bulones
IRAM 1013P Aceite de lineza decolorado
IRAM 1014P Aceite de linaza refinado
IRAM 1018P Xilol
IRAM 1510P Método de ensayo de compresión de rocas
IRAM 2009P Lámparas elétricas de filamento de tungsteno para usos generales
IRAM 2010P Símbolos gráficos electrotécnicos para instalaciones de alumbrado, caletacción y fuerza motriz
IRAM 2508P Tubos de acero para calderas: sin costura, laminados en caliente
IRAM 2514P Tubos de acero para calderos: sin costura, estirados en frio
IRA 4506P Dibujo técnico: plegado de láminas

Radio Loudspeaker Tests Pave Way for Better Reception

by Alfred N. Goldsmith

Chairman, ASA Sectional Committee on Radio (C16)

EVERYONE is acquainted with loudspeakers. During the last decades they have changed from a scientific curiosity to a conventional element of daily life. Every radio receiver in the home has its loudspeaker and every motion-picture theatre similarly depends on that interesting device for the reproduction of speech, music, and the widest variety of sound effects. Literally tens of millions of these speakers are used daily. It is therefore rather astonishing that so many years have elapsed without any clear definition of what constitutes good quality in a loudspeaker, or without even a generally accepted method for the measurement of loudspeaker performance. Therefore the approval of American Standards on Loudspeaker Testing, and on Volume Measurements for Electrical Speech and Program Waves marks a decided accomplishment and step forward.

Courtesy Western Electric Co.

Vu Indicator

Typical speech input panel using the new American Standard volume level indicators such as may be found in nearly every broadcast station.

These standards present unusual and almost revolutionary aspects. Although inherently they deal with physical phenomena, and prescribe suitable laboratory measurement methods and instruments, yet they have a closer association with the physiological and psychological fields than might be expected. Further, they deal with rather intangible entities, namely, the quality of the sound which is to be reproduced by a loudspeaker and the means to be used for controlling sound voluume accurately within a desired range.

The preparation of these standards seemed initially to be a relatively simple task. In retrospect, it turns out to have involved grave difficulties and to have required the accumulation of many data obtained through the sources of great industrial laboratories.

No Scientific Terms

In the absence of quantitative standards for loudspeaker testing, vague opinions by their users replaced accurate specifications. Thus, many of us can remember a perennial quarrel between those who preferred what they termed "mellow" quality in speakers and those who were sticklers for "clarity" or "intelligibility". The latter partisans called "mellow" reproduction "boomy" and condemned it. The former partisans designated "clear" reproduction as "shrill" or "harsh." And so it went, with neither group able to convince the other or even to translate its preferred type of loudspeaker performance into a definite specification in scientific terms.

Loudspeakers which had small vibrating cones or short horns were generally of the so-called "clear" type, while those with large cones or long horns were usually of the "mellow" type. The proponents of each type vigorously advo-

cated long horns or short horns respectively, thus importing into a strangely alien field the atmosphere of the cattle range!

When the Sectional Committee on Radio of the American Standards Association attacked the problem of devising dependable testing methods for speakers it was at once found that general agreement was extremely difficult. Different laboratories seemed to use dissimilar methods and to get conflicting results, with satisfaction to none but themselves in each case.

Acoustic Surroundings Determine Performance

Gradually the crux of the difficulty became clearer. The performance of a loudspeaker—not only psychologically but physically—depends not only on the speaker itself but also on its acoustic surroundings. These surroundings express the acoustic performance of the room or enclosure in which the loudspeaker has been placed. Thus, the performance of a loudspeaker in the "dead" and non-reverberant conditions of open-air use is entirely different from its performance in a large cathedral or, for that matter, in a hard-walled room of small dimensions. Then, too, the performance of the loudspeaker as measured close to it is quite different from that measured at a greater distance, and particularly in "live" rooms. Standing waves of sound in the room complicate the measurements. And the influence of the surroundings on loudspeaker performance becomes increasingly marked as the distance at which the measurements are made is progressively increased. Considering all these factors, it is easy enough to see why authorities in the field had agreed to disagree and why any general acceptance of test conditions and methods proved extraordinarily troublesome.

The fundamental questions about loudspeaker tests were: how should they be made; and under what conditions. After repeated trials, comparison of accumulated data, and the criticism of successive tentative drafts of the standards, general agreement was at last reached.

Impasse Avoided

An interesting happening, now fortunately only historical, may be mentioned. After what seemed to be an acceptable draft of the standards had been prepared, strenuous objections were raised to it on matters of technical principles and engineering detail by the highly skilled men from one of the greatest laboratories in the world. Their comments were both analytic and persuasive. Years of work seemed to have ended in an impasse. The ball was returned to the objectors in the form of a request for proposed substitute and superior test methods. For a time, some of the best minds in the field seemed literally stymied.

Eventually, however, the necessary data and methods were accumulated, studied, revised, and

Courtesy RCA Manufacturing Company

Testing a loud speaker in a household radio receiver. The room in which the test is being made is acoustically treated.

again circulated to the entire field of those properly interested in loudspeaker performance. The reward came in the form of general acceptance; and, for the first time, standards for loudspeaker testing became available.

It is strange that methods of testing an article used and judged by the millions in everyday life should have been so difficult to contrive. But perhaps the effort and time which were required will be compensated for by the usefulness of the new standards. The quantitative measurement and specification of loudspeakers may be expected to lead to further and steady improvement in that field with resulting improvements in the quality of sound reproduction by radio in the home and by motion pictures in the theater, not to mention public address systems, phonographs, and other forms of sound reproducing apparatus.

"Riding the Gain"

Passing to the question of standards for volume measurements for electrical speech and program waves, this presented some aspects resembling the preceding problem of loudspeaker testing as well as other aspects which differed widely. Volume measurements of electrical speech and program waves are more widely carried out than might be expected. In every radio studio, high-grade public-address system, and motion-picture studio, we find a skilled technician "riding the gain", as it is called. The sound in the studio is picked up by a microphone and then appropriately amplified electrically before it is passed out over a wire or radio circuit to be reproduced or recorded as the case may be. But the amount of amplification must be accurately and painstakingly controlled. If the amplification is too low, the final sound reproduction will be marred either by too soft

The new American Recommended Practices on Loudspeaker Testing (C16.4-1942) and Volume Measurement of Electrical Speech and Program Waves (C16.5-1942) were prepared by an ASA Sectional Committee under the sponsorship of the Institute of Radio Engineers and approved by the American Standards Association. The members of this committee, who represent prominent industrial organizations, as well as professional and engineering groups, are:

Alfred N. Goldsmith, Institute of Radio Engineers, *Chairman*
Harold P. Westman, Institute of Radio Engineers, *Secretary*
Institute of Radio Engineers, *L. E. Whittemore; Haraden Pratt*
American Institute of Electrical Engineers, *H. M. Turner; W. C. White; William Wilson*
American Radio Relay League, *J. J. Lamb*
Association of American Railroads, *J. L. Niessee*
Bell Telephone System, *L. Espenschied*
Electric Light and Power Group, *Gordon Thompson; H. E. Kent, (alt)*
National Association of Broadcasters, *J. C. McNary*
National Electrical Manufacturers Association—Radio Division, *W.R.G. Baker; C. J. Burnside; Frank Kunc; C. A. Priest (alt)*
National Fire Protection Association and Underwriters' Laboratories, *R. B. Shepard*
Radio Corporation of America, *A. F. Van Dyck*
Radio Manufacturers Association, Inc., *L. F. Curtis; E. T. Dickey; V. M. Graham*
Underwriters' Laboratories, Inc., *R. B. Shepard*
U. S. Department of Commerce, Inter-Dept. Radio Advisory Commission, *J. H. Dellinger*
U. S. Department of Commerce, National Bureau of Standards, *J. H. Dellinger*
U. S. Navy Department, Bureau of Ships
U. S. War Department, *George P. Dixon; William E. Appleton (alt)*
Member-At-Large, *O. H. Caldwell*

Copies of the standards may be ordered from the American Standards Association at 20 cents each.

sound or by too much accompanying noise (or "ground noise", as it sometimes is termed). If, on the other hand, the amplification is too great, the sound will be reproduced or recorded too loudly and there may be "saturation" or "overshooting" with resulting serious distortion of sound quality. The amount of amplification or power gain must therefore be kept within strict limits. Making the corresponding adjustments is "riding the gain".

The control of volume requires some form of indicating instrument, as a general rule. Watching such an instrument, the technician is able to keep the swings of the meter needle within the desired bounds. But until recently there were various sorts of accepted meters for the purpose. Some were sluggish, so to speak, and showed only rather prolonged excesses of amplification, while others were too lively and showed minor or instantaneous errors in monitoring with exaggerated importance. Furthermore, the scales of different volume indicators were not interchangeable, and this confused their operators and made it difficult to translate results obtained with one meter into effects obtained with another.

It must be stressed that in measuring and controlling electrical program waves some psychological elements had to be statistically considered. For example, what sort of a meter scale will most naturally correspond to the impressions obtained by the listener from the sound reproduction which is being monitored? This and a number of similar vexatious questions required careful study in a number of laboratories and studios before general agreement became possible.

Perhaps we shall have appropriate volume indicators and manual or automatic controls associated with them in general use on radio receivers in the home in future years. Thus, reproduced sound volumes may be held within acceptable and standardized limits. Today sound reproduced too softly falls below the level of the ambient noise (such as street noises which leak through open windows or the conversation between relatively uninterested members of the listening group). And sound reproduced too loudly is an invitation to a neighborhood feud.

The new American Standards on loudspeakers and volume indicators are therefore not only technically useful contributions and industrial aids but may also in time contribute to the beauty of sound reproduction in millions of homes and the increasingly judicious use of studio and home acoustic equipment.

Gasoline and Fuel Oil Controlled by Minimum Specifications

Minimum specifications on gasoline, kerosene, and fuel oil to be pooled and shipped into the East Coast area in accordance with OPC Directive 59 have been set by the Office of the Petroleum Coordinator after consultation with the oil industry.

Minimum gasoline specifications call for 80-octane for premium grade and 72-octane for regular or house brand (80-octane is the minimum standard acceptable to the Army.

The minimum kerosene standard is the U. S. Treasury Procurement Division Specification VV-K-211a. The fuel oil minimum is Commercial Standard CS 12-40.

Press Association, Inc.

Cocoanut Grove tragedy calls attention to need for better building regulation

Building Exits Code Protects Against Loss of Life in Fire

by Robert S. Moulton

Technical Secretary, National Fire Protection Association, Boston; Secretary, NFPA Committee on Safety to Life; Secretary, ASA Sectional Committee on Building Exits Code

THE Cocoanut Grove Night Club tragedy is clearly due to gross violation of several of the fundamental principles of fire safety which have been demonstrated by years of experience in other fires and which should be well known to everybody. It is too soon as yet to determine the responsibility, to evaluate the part that may have been played by the chaotic condition of Boston's building laws, incompetent enforcement, political influence and careless management, but the main lessons of this fire are clear.

A night club is essentially a place of public assembly in the same life hazard class with a theatre but having greater possibilities of fire. As a result of the Iroquois Theatre fire in Chicago in 1903 when 602 people were burned to death, theatres in the United States are well regulated by fire laws. Automatic sprinklers are required over combustible stage scenery, adequate exits are required, and regular inspections are made in accordance with the law to make sure that exits are free and unobstructed and that all fire precautions are observed. No such safeguards have been applied to night clubs, which are far more dangerous than theatres. Night clubs commonly are located in old buildings made over for the purpose and practically every known rule of fire safety is violated. The Cocoanut Grove building was certainly no worse than hundreds of other night clubs located in various cities throughout the United States.

The most glaring feature of this tragedy was the lack of proper exits. The Building Exits Code, which is a well recognized standard prepared by a representative committee of national experts,

contains in its provisions on places of public assembly a number of basic requirements which, if observed, would clearly have prevented this tragedy.

Revolving doors have long been considered by the NFPA Committee on Safety to Life and the ASA Sectional Committee as a menace under fire and panic conditions. Even though a revolving door may be of the so-called "collapsible" type, it can readily serve as a death trap. The Building Exits Code prohibits revolving doors as required means of exit in places of public assembly and further specifies that if revolving doors are used there must be a swinging door immediately adjoining or within 20 feet. In our opinion revolving doors should be prohibited in all places of public assembly.

Reports indicate that there were other doors from this building which might have served as exits but which were locked and one important door was hidden by drapes. The Building Exits Code requires that all doors be kept unlocked and unobstructed at all times when a building is occupied, also that in a place of public assembly no draperies shall be permitted in front of exit doors.

The basement lounge where many persons perished violated the fundamental rule that there shall be two clearly marked exits, so arranged that if one is blocked during a fire the other will furnish a safe path of escape. A clearly marked second exit from this room leading directly to the outside of the building, as provided in the Building Exits Code, would have saved many lives.

The Building Exits Code is intended to protect persons, not property, against fire hazards by specifying the number, size, and position of exit facilities, as well as construction requirements, needed to empty buildings promptly and safely. Its provisions are based on studies of actual fires in which lives have been lost, and the principles on which it is based have been checked by the Building Exits Committee with studies of actual fire experience. It has been found that the buildings in which the major losses of life by fire have occurred have fallen far short of the standards of the Code.

The Code includes sections on schools, department stores, factories, hospitals and institutions, places of public assembly, and hotels and apartment houses.

A revision, to coordinate various sections and to bring them up-to-date as well as to define specifically the types of buildings which should be provided with emergency lighting to assure continued illumination of all exitways, was approved by the American Standards Association this year. Copies of the Code are available at $1.00 each.

Flameproofing Not Effective

The immediate cause of the start of this fire is unimportant and too much blame should not be attached to the boy who was responsible. With a large quantity of highly combustible decorative material, fire might have started from any one of a number of causes. The main factor was the presence of the combustible material in violation of the Building Exits Code which provides: "Paper and cloth decorative material should be kept to a minimum in places of public assembly since such flimsy materials increase the hazard of the kindling and spread of fire." Combustible decorations can be flameproofed but effective flameproofing requires careful treatment and at best no chemical treatment of combustible materials actually makes them fireproof. Some chemicals used for flameproofing may generate noxious smoke when heated and according to reports this may have been an important factor in this fire. The NFPA has published standards on the flameproofing of combustible materials but advises against placing too much reliance on such treatments.

A standard automatic sprinkler system would have prevented this tragedy. A few sprinkler heads, opened by the heat of the fire, would have stopped the blaze in its incipiency. In the 50-year records of the National Fire Protection Association, there is no case on record where any major loss of life by fire has occurred in a building equipped with a standard automatic sprinkler system.

Exits Code Is Guide for Legislation

As a result of this fire, there will doubtless be a wave of state and city legislation regulating night clubs. It is indeed high time that these potential death traps are brought into line with the established fire safety requirements that have long been applied to theatres and other places of public assembly. The Building Exits Code, prepared under the sponsorship of the National Fire Protection Association and approved by the American Standards Association, is available as a guide for legislation which will require reasonable fire safeguards involving a minimum of inconvenience and expense to the operators. No legislation, however, will be effective in preventing repetition of such tragedies unless it is competently enforced without interference by political or commercial interests.

New National Building Code Proposes Uniform Regulations for Canada

THE National Building Code of Canada has just been completed and issued under the sponsorship of the National Housing Administration of the Department of Finance and the Codes and Specifications Section of the National Research Council of Canada. The Code is a three-fold document setting down recommended regulations on construction requirements, fire protection, and on health and sanitation. It represents the work of some 60 active committee members chosen for their individual knowledge in specialized fields, and of an advisory committee of professional and trade associations and government agencies throughout the country.

The work was started four years ago, but has been delayed because of the demands made by the war. The several parts were published separately as they were completed in order that the work of the various committees would not be lost if any obstacle, such as difficulties caused by the war, should prevent publication in final form.

Arranged by Subject

In this Code all regulations dealing with a particular subject are collected in a single chapter; all material on exits, for example, is placed in the chapter on "Exits." In the Introduction it is stated that this method of arrangement avoids repetition, makes a code more compact, and leads to a more consistent treatment of the various subjects. To meet possible objections that a type of arrangement by occupancy is more convenient to use, particular attention has been given to indexing to facilitate the use of the code.

If the reader of the Code is interested in a general subject such, for example, as "Exits," it is explained, he will turn to Section 4.6 which contains all regulations relating to exits; but if his interest is in putting up a particular building such as a school, reference to the index will indicate where there are special regulations applicable to schools. The general regulations, such as the structural requirements, will of course also apply.

It is intended that the Code will be suitable for adoption in whole by municipalities desiring to use a building code.

In order that the new Code may not have the effect of impeding the introduction of new and improved methods of construction, a special Article provides in general terms for the introduction of new materials and methods of construction. This will be supplemented, it is explained, by publication from time to time of revisions and additions to the Code.

The Code is in five Parts. Part 1, Administration; Part 2, Definitions; Part 3, Structural Requirements; Part 4, Fire Protection; Part 5, Requirements Bearing on Health and Sanitation.

Appendices List Specifications

A Standard Plumbing By-Law and a list of specifications and other publications referred to in the text, as well as methods of carrying out various tests for building materials, are included as appendices. The list of specifications referred to includes standards of the Canadian Engineering Standards Association, the American Society for Testing Materials, the American Standards Association, the British Standards Institution, the Canadian Government Purchasing Standards Committee, the National Board of Fire Underwriters, the National Fire Protection Association, Underwriters Laboratories, the American Gas Association, the American Society of Heating and Ventilating Engineers, and the National Warm Air Heating and Air Conditioning Association. These appendices are intended to serve as useful information for applying the Code but are not intended as integral parts of it.

In announcing publication of the Code to the American Standards Association, the Officer in Charge of the Codes and Specifications Section of the National Research Council, said, "May I . . . express the appreciation of the departments and committees concerned for the valuable assistance rendered by your organization in the preparatory work leading to the publication of this document."

Copies of the National Building Code can be obtained from the Officer in Charge, Codes and Specifications Section, National Research Council, Ottawa, Canada. The charge is $1.00 per copy.

Budget Bureau Simplifies Government Questionnaires

An industry advisory committee has been named to work with the Budget Bureau on simplification and elimination of government questionnaires and forms. After January 1, 1943, a questionnaire that does not bear the Budget Bureau's symbol need not be answered.

Standards for Replacement Parts for Civilian Radio In War Time

by Dr. O. H. Caldwell

Chairman, ASA War Committee on Replacement Parts for Civilian Radio

THE radio receiver in nearly every American home has become an indispensable part of the "home front" in the maintenance of civilian morale and the enlightenment of every American citizen on the conduct of the War, both at home and abroad.

The assurance of continued operation of these home radio sets is the object of a project on standardization and simplification of replacement parts for civilian radio, which the American Standards Association has inaugurated at the request of the Office of Price Administration, following consultation of the latter agency with the Radio and Radar Branch of the War Production Board.

Members of the ASA War Committee on Replacement Parts for Civilian Radio are:

Dr. O. H. Caldwell, Editor, *Radio Today* and *Electronic Industries*, *Chairman*

John Borst, Chief Engineer, John F. Rider Publisher, Inc.

M. M. Brandon, Underwriters' Laboratories, Inc.

J. T. Filgate, Manager, Commercial Contracts Division, Hazeltine Service Corporation

Garrard Mountjoy, RCA License Laboratory

M. J. Schinke, Chairman, Service Committee, Radio Manufacturers Association

P. R. Butler, *alternate*

K. S. Geiges, Simplification Branch, War Production Board

E. A. Graham, Head, Consumer Durable Goods Section, Standards Division, Office of Price Administration

F. H. McIntosh, Radio and Radar Branch, War Production Board

Samuel Weisbroth, *alternate*

George F. Du Val, president, Radio Servicemen of America

Arthur E. Rhine, *alternate*

S. L. Chertok, ASA Staff Engineer, *secretary*

Under War Standards Procedure

The new project is being conducted in accordance with the ASA War Standards Procedure by the ASA War Committee on Replacement Parts for Civilian Radio. The committee's work is entirely distinct from that of the standardization of military radio components in progress in the War Committee on Radio under the chairmanship of S. K. Wolf, of the Radio and Radar Branch, WPB.

However, the War Production Board is in close contact with the project through its liaison representatives and through its WPB Radio Parts Industry Advisory Committee which is furnishing draft specifications and simplified parts lists to the ASA Committee for review and revision.

Following consideration by the ASA Committee, the proposals are circulated to the various set manufacturers, design laboratories, service organizations, and others concerned, for comment. After review of the comments, desirable revisions in the specifications are made after consultation with the appropriate subcommittee of the WPB Radio Parts Industry's Advisory Committee. After final review by the ASA Committee, the standards are officially promulgated.

Basis for WPB and OPA Rulings

It is expected that these standards will serve as a basis for a limitation order and for allotment of materials for manufacture by the War Production Board. At the same time they will give the Office of Price Administration a definite foundation for an order fixing the prices of these stand- and parts of standard quality.

The final standards will contain performance, dimensional, and construction requirements for a limited but fully adequate line of replacement parts designed to service practically all of the modern home receivers in use today. Tubes are not included in the project.

In the design of these standard parts, every effort will be made to provide units that will be

mechanically interchangeable with present parts with a minimum of difficulty. In addition, non-critical or less critical materials, and less of these materials, will be used wherever possible in these parts as compared to their peacetime prototypes.

Through simplification of the number of varied ranges now in use and the use of multi-purpose units when practicable, the actual number of parts will be held to an absolute minimum. This will further serve to reduce the amount of strategic materials kept in inventory by minimizing the stock of parts held by jobbers and service men.

Plants Freed for War Production

The simplified standard line of parts will also make more efficient use of manufacturing facilities, since there will be quantity production on the standard units instead of limited production on a large number of different types of each part as in the past. Facilities thus freed will be devoted to direct production for the Armed Forces.

Courtesy Underwriters' Laboratories, Inc.

This radio, open for testing, shows how numerous are the individual parts that must be kept operating for the duration.

Alternate Provisions Change Standards In Line With War Needs

The American Society for Testing Materials announces that Emergency Alternate Provisions have been adopted to bring the following standards approved by the American Standards Association into line with war requirements. These standards were approved by the ASA with the ASTM as sponsor:

Welded and Seamless Steel Pipe (B36.1-1942; ASTM A53-42)

Lap-Welded and Seamless Steel Pipe for High-Temperature Service (B36.3-1942; ASTM A106-42T)

Electric-Fusion-Welded Steel Pipe (Sizes 30 In. and Over) (B36.4-1942; ASTM A134-42)

Electric-Resistance-Welded Steel Pipe (B36.5-1942; ASTM A135-42)

Electric-Fusion-Welded Steel Pipe (Sizes 8 In. to but not including 30 In.) (B36.9-1942; ASTM A139-42)

Electric-Fusion-Welded Steel Pipe for High-Temperature and High-Pressure Service (B36.11-1942; ASTM A155-42)

Lap-Welded and Seamless Steel and Lap-Welded Iron Boiler Tubes (B36.12-1942; ASTM A83-42

Electric-Resistance-Welded Steel and Open-Hearth Iron Boiler Tubes (B36.13-1942; ASTM A178-40)

Seamless Steel Boiler Tubes for High-Pressure Service (B36.14-1942; ASTM A192-40)

Spiral-Welded Steel or Iron Pipe (B36.16-1942; ASTM A211-40)

Seamless-Alloy-Steel Boiler and Superheater Tubes (B36.17-1942; ASTM A213-42)

Lightweight and Thin-Sectioned Gray-Iron Castings (G27.1-1942; ASTM A190-40)

Carbon and Alloy-Steel Nuts for Bolts for High-Pressure and High-Temperature Service to 1100 F (G38.1-1942; ASTM A194-40)

Axle-Steel Bars for Concrete Reinforcement (G43.1-1942; ASTM A160-39)

Test for Carbon Residue of Petroleum Products (Z11.47-1942; ASTM D524-42)

The emergency provisions have been prepared in order that the purchaser may use them in his specifications to conserve critical and strategic materials.

A complete list of ASTM specifications for which emergency alternate provisions have been prepared is published in the October issue of the *ASTM Bulletin*.

Another standard, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Uses (G8.7-1941; ASTM A120-40), was also revised by the ASTM this year. The question of approval of the revision is now receiving attention in the ASA committtee on Zinc Coating for Iron and Steel, G8. The emergency alternate provisions that apply to this standard have been unchanged by the latest revision.

How to Win on the Home Front

The place of standards in the price control program is one of the subjects discussed in a new consumer education booklet by Helen Dallas, *How to Win on the Home Front*. The booklet is being published under the sponsorship of the Public Affairs Committee.

Copies can be obtained from the Public Affairs Committee, Inc., 30 Rockefeller Plaza, New York.

War Revision of Meter Code

TESTING of electricity meters will be done less frequently during the period of the war, according to a revision to the Code for Electricity Meters, just approved by the American Standards Association.

For more than three decades this Code has been the generally recognized standard of practice in the art of metering electric energy. It has formed a guide for the official regulations promulgated by the public utility commissions of many states, and in some states has been adopted in toto. One of the many practices recommended in the Code is a suggested schedule for the periodic testing and readjustment of watthour meters.

The flow of manpower to war industry and to the Army has now left the utility meter departments with sadly depleted staffs of skilled testers. Limitations on gasoline and rubber are further reducing the number of meters per day which a single tester can handle. It therefore seemed to those concerned to be desirable, if technically advisable, to reduce the meter-testing load by increasing the permissible interval between tests of the smaller sizes of meters, particularly those in residences. These constitute the great bulk of the meters in circuit.

The Code itself was originally issued in 1910 by the joint action of the Meter Committees of the National Electric Light Association and the Association of Edison Illuminating Companies and has been revised from time to time. The most recent extensive revision was completed in May 1941 under the sectional committee procedure of the American Standards Association, with the National Bureau of Standards, the Association of Edison Illuminating Companies, and the Edison Electric Institute as joint sponsors.

Manpower Shortage Responsible

As a result of the present shortage of manpower, the Edison Electric Institute and the Association of Edison Illuminating Companies, two of the sponsors, suggested to the American Standards Association that the ASA Sectional Committee on the Code for Electricity Meters (C12) be set up as a War Standards Committee to prepare a revision of the section on periodic testing. The ASA acted on the suggestion and certain vacancies in the membership of the committee were filled in order that the committee could proceed with the work on a War Standard. The question was first referred to a subcommittee consisting of F. E. Davis, Commonwealth and Southern Corporation; P. L. Holland, Public Utilities Commission of Maryland; R. H. Nexsen, Public Service Commission of New York; L. D. Price, Public Service Electric and Gas Company; A. R. Rutter, Westinghouse Electric and Manufacturing Company; and F. B. Silsbee, National Bureau of Standards, Chairman.

Courtesy of Consolidated Edison Co. of N. Y.

by F. B. Silsbee[1]

Chairman, ASA War Standards Committee on Code for Electricity Meters

Fortunately, data were obtained by Mr. Price, and from the records of the Department of Public Service, State of Washington, on the performance of several thousands of meters over long periods of time. An examination of these data showed that the drift in calibration of the great majority of these meters had been very slight and that the number drifting fast was about offset by an equal number which became slow.

It was therefore decided (without dissenting vote, in either the subcommittee or the main committee) that the interval between tests of a-c meters of 12 kva and less could be extended to eight years without much danger that an injustice would be done either to the power companies or their customers. This revision was approved November 5, 1942, as American War Standard. The official designation is C12WS-1942.

The revised paragraph on periodic testing has been printed in such form that it can be pasted in the Code itself under the original paragraph which it is intended to replace. Copies are available from the American Standards Association at 10 cents.

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[1] National Bureau of Standards, Washington, D. C.

Standards Issued by Associations and Government

(See "ASA Standards Activities", page 322, for new American Standards and progress on ASA projects)

For the information of ASA Members, the American Standards Association gives here a list of the standards received during the past month by the ASA Library for its classified files. With the increasing amount of material being received it has been decided to eliminate from the monthly list a few of those standards which may not be so important to ASA Members, such as Federal Specifications for foods. The list below, therefore, includes only those standards which the American Standards Association believes will be of greatest interest to Members in connection with their war production.

The standards listed may be consulted by ASA Members at the ASA Library, or copies may be obtained from the organization issuing the standard. Addresses of these organizations are given for your convenience.

Associations and Technical Societies

National Aircraft Standards Committee (Aeronautical Chamber of Commerce of America, 610 Shoreham Building, Washington, D. C.)

NAS 160 (2 pages) Wheel-Control, Pilot's Military, Aileron September, 1942
NAS 161 Cap Assembly, Military Control Wheel Hub September, 1942
NAS 162 Cap, Military Control Wheel Hub September, 1942
NAS 163 Insignia, Military Control Wheel Hub Cap September, 1942
NAS 164 Insert, Military Control Wheel Hub Cap September, 1942

National Aircraft Standards Committee (Continued)

NAS 165 Switch (Gun), Military Control Wheel September, 1942
NAS 166 Switch (Bomb Release & Radio), Military Control Wheel September, 1942
NAS 167 Cap, Trigger Switch Cavity, Military Control Wheel September, 1942

National Board of Fire Underwriters (85 John Street, New York, N. Y.)

Foam Extinguishing Systems NBFU No. 11
Gas Systems for Welding and Cutting NBFU No. 51

U. S. Government

National Bureau of Standards (Washington, D. C.)

Glossary of Housing Terms BMS91 September 3, 1942 15¢
Hardened Copper Letter Circular LC698 (Revision of LC444)
Luminous and Fluorescent Paints (Replaces LC678) Letter Circular LC703

Commercial Standards

List of Commercial Standards, Revised to October 1, 1942 (Supersedes LC695) Letter Circular LC705

Simplified Practice Recommendations

Circulated to Industry

Dental Hypodermic Needles R108-34

Approved by Industry

Package Sizes for Agricultural Insecticides and Fungicides R41-40
Glass Containers for Green Olives and Maraschino Cherries R196-42, R197-42

Reaffirmed

Steel Reinforcing Spirals R53-32 5¢

In Print (Copies available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

Structural Insulating Board R179-42 5¢

Federal Specifications Executive Committee (U. S. Treasury Department, Washington, D. C.)

Federal Specifications

(Copies available from Superintendent of Documents, Government Printing Office, Washington, D. C.)

The date after the title of the specification indicates when it becomes effective.

Monthly Report on Changes in U. S. Army Specifications, Federal Specifications, Commercial Standards, Simplified Practice Recommendations
Aluminum-Alloy: forgings, heat-treated (superseding QQ-A-367a) QQ-A-367b February 1, 1943
Bellows, Hand: foundry (new) LLL-B-211 March 1, 1943
Boots: rubber, short, heavy (Amendment 1) ZZ-B-556a March 1, 1943
Brass: castings (to be brazed) (Amendment 1) QQ-B-601 January 1, 1943
Brass, Commercial: bars, plates, rods, shapes, sheets, and strips (Amendment 2) QQ-B-611a February 1, 1943
Brass, Commercial and Naval: castings (Amendment 2) QQ-B-621 January 1, 1943
Brass, Naval: bars, plates, rods, shapes, sheets, and strips (Amendment 2) QQ-B-636 January 1, 1943

Federal Specifications—(Continued)

Bronze, Aluminum:
bars, plates, rods, shapes, sheets, and strips (Amendment 3) QQ-B-666 January 1, 1943
castings (Amendment 1) QQ-B-671a January 1, 1943
Bronze, Manganese; bars, forgings, plates, rods, and shapes (Amendment 1) QQ-B-721a January 1, 1943
Cellulose; absorbent, surgical (new) L-C-166 March 1, 1943
Clamps; and hand-screws (Amendment 2) GGG-C-406 January 1, 1943
Drier; paint, liquid (superseding TT-D-651) TT-D-651a February 1, 1943
Frames; hack-saw (Amendment 1) GGG-F-671 February 15, 1943
Grease; lubricating, graphite (Amendment 1) VV-G-671a February 1, 1943
Insecticide:
liquid (fly-spray) (new) O-I-541 March 1, 1943
liquid (household) (new) O-I-546 March 1, 1943
Oil; insulating (for transformers, switches, and circuit-breakers) (new) VV-O-401 February 10, 1943
Pins; cotter, split (Amendment 1) FF-P-386) March 1, 1943
Plywood-panels and Veneered Lumber-core Panels (new) NN-P-521 March 1, 1943
Prussian-Blue, dry, paste-in-japan, paste-in-oil (Amendment 3) TT-P-691 February 15, 1943
Pumps, Tire; hand-operated (new) XX-P-746 March 1, 1943
Remover; paint and varnish (organic-solvent-type) (superseding TT-R-251) TT-R-251a February 1, 1943
Sand; (for use in) sheet-asphalt or bituminous-concrete pavements (superseding SS-S-71) SS-S-71a February 1, 1943
Skins; chamois (superseding KK-S-416) KK-S-416a March 1, 1943
Solder; tin-lead (Amendment 1) QQ-S-571a March 1, 1943
Transformers; distribution, single-phase, 60 cycles (100 Kva and below; 15,000 volts and below) (new) W-T-631 March 1, 1943
Vises (superseding GGG-V-436) GGG-V-436a February 15, 1943
Wax, General-Purpose; solvent-type, liquid and paste (for floors, furniture, etc.) (superseding P-W-141) P-W-158 March 1, 1943
White-Lead; basic-carbonate, dry, paste-in-oil, and semi-paste containing volatile thinner (Amendment 4) TT-W-251a February 1, 1943
Wire; phosphor-bronze, spring (Amendment 3) QQ-W-401 February 1, 1943

Emergency Alternate Federal Specifications

(Prepared in collaboration with the War Production Board)

Directory of Emergency Alternate Federal Specifications (Covers alternate specifications issued from April 29 through November 6, 1942) Prepared by the Consumer Standards Section, Consumer's Counsel Division, Agricultural Marketing Administration, U. S. Department of Agriculture, for the Conservation Division, War Production Board. Brought up-to-date by the Specifications Branch, Conservation Division, WPB.

Limited number of copies available from Conservation Division, WPB.

Binders; loose-leaf, ring-type E-UU-B-346 October 29, 1942
Boxes; wood-cleated-fiberboard (superseding E-NN-B-591, 1/30/42) E-NN-B-591 November 3, 1942
Bronze, Manganese; castings (including manganese-aluminum-bronze) (superseding E-QQ-B-726b, 10/14/42) E-QQ-B-726b November 3, 1942
Brushes; scrubbing, deck (superseding E-H-B-531, 3/6/42) E-H-B-531 November 20, 1942
Coats and Trousers; rubber-coated (foul-weather-clothing) E-BBB-C-606 November 20, 1942
Couplings:
hose, cotton (rubber-lined) and linen (unlined) (superseding E-WW-C-621a, 8/6/42) E-WW-C-621a November 3, 1942
hose, garden and water (superseding E-WW-C-623a, 8/6/42) E-WW-C-623a October 29, 1942
Erasers; rubber and rubber-substitute (superseding E-ZZ-E-661a, 6/10/42) E-ZZ-E-661a November 3, 1942
Gloves; working, cotton, with leather palms (superseding E-JJ-G-451, 7/7/42) E-JJ-G-451 November 13, 1942
Hose; steam E-ZZ-H-541 November 13, 1942
Leather:
case E-KK-L-166a November 3, 1942
lace E-KK-L-201a November 6, 1942
Motor; alternating-current, fractional-horsepower, single-phase and universal E-CC-M-636 November 3, 1942
Packing; asbestos, sheet, compressed (superseding E-HH-P-46, 4/21/42) E-HH-P-46 November 20, 1942
Packing, Fiber; for lubricating and fuel-oil E-HH-P-96a November 20, 1942
Paper; Kraft, wrapping, waterproofed (superseding E-UU-P-271, 11/3/42) E-UU-P-271 November 20, 1942
Pipe and Pipe-Fittings: soil, cast iron (superseding E-WW-P-401, 9/25/42) E-WW-P-401 October 29, 1942
Plaster; adhesive, surgical (superseding E-U-P-401, 1/2/42) E-U-P-401 November 6, 1942
Tubing; aluminum-alloy (AL-17) (aluminum-copper-magnesium-manganese), round, seamless (superseding E-WW-T-786, 10/15/42) E-WW-T-786a November 6, 1942
Wire; steel, zinc-coated (for wire-bound boxes) (superseding E-QQ-W-446, 6/23/42) E-QQ-W-446 November 6, 1942

U. S. Office of Civilian Defense (Washington, D. C.)

Passive Protection for Industrial Plants OCD 3031

Dorothy Houghton Represents AHEA On ASA Standards Council

Miss Dorothy Houghton is now a member of the Standards Council of the American Standards Association representing the American Home Economics Association, succeeding Miss Alice L. Edwards. Miss Edwards will continue her active interest in the work of the ASA, however, as Miss Houghton's alternate on the Council. Miss Ardenia Chapman now represents the AHEA on the ASA Advisory Committee on Ultimate Consumer Goods, succeeding Miss Houghton.

The American Home Economics Association has been an active member of the American Standards Association since it became a Member-Body in 1929. It has taken an active part in many of the ASA technical committees working on standards for consumer goods, and as a member of the Standards Council has had a voice in the final ASA decisions on approval of standards, initiation of projects, and membership of committees.

Standard Tests and Specifications In WPB and OPA Orders

IN many of the War Production Board and Office of Price Administration orders, standards play an important part, either through reference to existing standards or through setting up standards or simplification schedules in the order itself. Such standards form the basis for control of production, conservation of materials, or for control of prices. The following orders have the effect of setting up standard specifications, tests, grades, or simplification schedules.

War Production Board

Agave Fiber, Agave Products and Certain Other Cordage (General Preference Order M-84, as amended October 31, 1942)—

Limits production of wrapping twine and binder twine, and defines wrapping twine as twine, including lath yarns (ply and yarn goods) as included in National Bureau of Standards Simplified Practice Recommendation R 92-38, and any other twine suitable for the purposes for which the twines described in this Recommendation are used.

Aluminum (Supplementary Order M-1-i as Amended November 20, 1942)—

Defines "low grade aluminum" as containing copper in excess of 4 percent by weight, and either iron or zinc in excess of 1 percent by weight. Allocates aluminum and low-grade aluminum for various uses.

Asphalt and Tarred Roofing Products and Asphalt Shingles (Limitation Order L-228)—

A shortage of materials and facilities used in the manufacture of asphalt and tarred roofing products and asphalt shingles will result unless raw material, transportation facilities, and manpower are conserved through simplification and reduction of types, the Order explains. It provides that after January 1, 1943, only the types, sizes, and forms of asphalt and tarred roofing products or asphalt shingles listed in Exhibit A of the Order may be produced. Exhibit A lists finished weight in pounds, area per roofing square feet, and dry felt weight which represents the minimum weight in pounds per 480 square feet of moisture-free felt.

Canned Foods (Supplementary Order M-86-a as Amended Nov. 23, 1942)—

Lists the grades and can sizes preferred for the use of the government and the percentage of the 1942 pack to be set aside for the government. Also includes specifications for weatherproof solid fiber boxes and wirebound wood boxes. The latter must comply with Federal Specification NN-B-631a, except in certain styles. Minimum thickness of sides, top, bottom, ends and liners and total weight (exclusive of box) is given for veneers or sawed boards for this latter style of box. For the weatherproof solid fiber boxes, the minimum thickness of board, and the minimum bursting strength in pounds is given. Boards must comply with the waterproofing tests specified. Other specifications are also given.

Specifications for nailed wooden boxes provide that boxes for weights not exceeding 75 lb shall be Style 1, Federal Specication NN-B-621a. Boxes for weights exceeding 75 lb shall be Style 5. The thickness of different parts of the box is listed.

Clothing for Men and Boys (General Limitation Order L-224)—

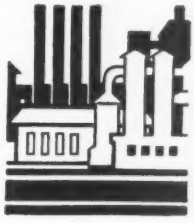
Specifies maximum dimensions for certain sizes of men's and boys' clothing and orders the elimination of details which use extra materials, such as outside patch pockets, cuffs, pleats or tucks, and vests. Typical measurement is 35 inches (including the turn-up) for a pair of men's trousers size 32 inch waist regular with other sizes and variations in normal proportion.

Construction Machinery and Equipment Simplification and Conservation (Limitation Order L-217)

Gives the Director General for Operations authority to establish conservation of materials and simplified practices with respect to types, sizes, forms, specifications, or other qualifications for construction machinery and equipment or parts thereof.

Schedule I, Scrapers—

Prohibits the use of alloy steel, as defined in the Order, for production of scrapers except those on production schedules already approved by the Director General for Operation, and then only until December 15.



Cotton Textiles for Use for Bags (General Preference Order M-107, as Amended November 2, 1942)—

Gives specifications for cotton textiles suitable for bags, and restricts the use of these textiles.

Cotton Textiles for Work Apparel

Hospital Clothing—(Schedule III to General Preference Order M-207)—

Defines "Hospital clothing textiles", and gives sizes of carded sheetings, carded print cloth, carded drills, carded jeans, carded or combed poplins, carded or combed broadcloths, carded colored chambrays — plains and fancies, seersuckers (carded), and frock cloth (carded).

Women's Work Clothing (Schedule IV to General Preference Order M-207)

Defines textiles used for women's work clothing and gives sizes and shrunk weight basis.

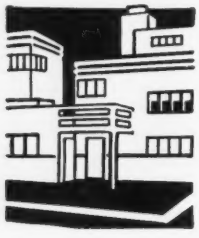
Domestic Ice Refrigerators (Supplementary Limitation Order L-7-c)—

Production quotas for domestic ice boxes will be assigned on the basis of applications indicating how much iron, steel, and other critical materials the manufacturer proposes to use in each ice refrigerator. It is expected that the Director General for Operations will assign larger quotas to manufacturers who submit refrigerator specifications requiring the smallest amount of critical materials. Efforts will be made to assign quotas to manufacturers whose plants are located in areas where there are no labor shortages and also where shipment of both raw materials and the finished product will not impose a strain on transportation facilities.

Ice boxes produced under this program will not be of as high quality as in normal times, the WPB announces, but it is expected that the specifications which will be established will provide a serviceable and durable product.

The order provides that all specifications must meet minimum quality standards established by the National Bureau of Standards.

The order also requires that after January 1 only two types of ice refrigerators can be produced: those having a net ice capacity of either 50 pounds or 75 pounds, with a permitted variance of 10 pounds either way. This is expected to permit standardization and interchanging of parts made by different manufacturers.



Electrical Motors and Generators (General Conservation Order L-221)—

This new order puts a stop to the general practice of American industry of "over-motoring," that is, applying greater motor capacity than necessary for the job to be done. As a means of stopping this practice, the order applies certain measurements by which the actual power requirements may be related to the horsepower of the motor applied for by the purchaser.

The order, L-221, prohibits the delivery or acceptance of motors, unless they comply with certain standard specifications and are of the simplest practicable, mechanical, and electrical design. It also requires the purchaser to certify and show reason why he must have a motor of a special type; and it restricts the use of such special types to the conditions and the purposes for which they are required. For example, it limits the use of explosive-proof motors to hazardous locations as defined by the National Electrical Code approved by the American Standards Association.

It is estimated that the conservation and simplification provisions in the order will save in one year about 15,000,000 pounds of copper, 55,000 tons of carbon steel, and 150,000 pounds of stainless steel.

Glycerine Recovery (Conservation Order M-193)

Defines "neutral fats or oils content" and provides that free fatty acids, moisture, insoluble impurities, and unsaponifiables shall be determined by the official methods of the American Oil Chemists Society. "Fair average quality crude glycerine" means soap lye crude glycerine and saponification crude glycerine meeting specifications for glyceral content, ash, and organic residue. These are to be determined by the official methods of the American Oil Chemists Society.

The order also specifies the required per cent of recovery of crude glycerine and the required standard of refining.

Kitchen, Household and Other Miscellaneous Articles (Supplementary Limitation Order L-30-a)

Galvanized Ware and Non-Metal Coated Metal Articles—

Limits number of sizes and gauges of garbage cans and pails, pails and buckets, wash tubs, wash boilers, and funnels, and the amount of materials used for such production. Garbage cans produced in fulfillment of preferred orders are not covered by the restriction, however, provided such cans are constructed in accordance with U. S. Army Specification 29-91 (October 18, 1939), Federal Specification RR-C-81 (as amended May, 1936), Emergency Alternate Federal Specification E-RR-C-81 (April 30, 1941), or Bureau of Ships Specification 42C23 (INT) (June 1, 1942). Buckets produced in fulfillment of preferred orders must be constructed in accordance with Federal Specification RR-B-771a (March 3, 1939) or Emergency Alternate Federal Specification E-RR-B-771a (December 11, 1941). Funnels for preferred orders are to be constructed in accordance with Bureau of Ships Ad Interim Specification 41-F-6 (INT) for Funnels (December 1, 1941), or with Chemical Warfare Service Drawings B-18-41-2 (revised January 27, 1942) or E-18-41-1 (revised November 22, 1941) or subsequent drawings designed for Chemical Warfare Service needs.

Enameled Ware—

Restricts production to a limited list of kitchen utensils, such as coffee boilers, double boilers, dish pans, steam-table insets, percolators, sauce pans, and roasters. Each utensil is limited to specified sizes.

Cast Iron Ware—

Limits number of sizes of skillets, griddles, kettles, dutch ovens, and muffin pans, and specifies the sizes which may be continued.

Material Entering Into the Production of Automotive Tire Chains and Chain Parts (Limitation Order L-201)—

Limits production to the sizes specified.

Medical Equipment and Supplies Simplification (General Limitation Order L-214)—

Authorizes the Director General for Operations to issue schedules establishing simplified practices with respect to the types, sizes, forms, specifications, or other qualifications for medical equipment, supplies, instruments, and materials, and other similar products.

Schedule I, Hospital Enameled Ware—

Lists the types of hospital enameled ware which may be produced in the sizes specified in the order.

National Emergency Specifications for Steel Products (Limitation Order L-211)—

This Order gives the Director General for Operations authority to issue schedules establishing standards of sizes, shapes, specifications, or other qualifications of steel products.

National Emergency Specifications for Steel Products—(Continued)

Concrete Reinforcement Steel, Schedule 1—

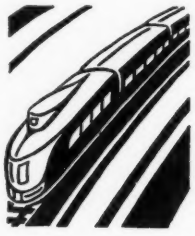
Restricts production of concrete reinforcement bars to the sizes and shapes set forth in Simplified Practice Recommendations R26-42 and R53-32 respectively as issued by the National Bureau of Standards.

Only concrete reinforcement steel manufactured according to the following specifications may be delivered, except to the Federal Government:

Billet steel bars ASTM A 15-39
Rail steel bars ASTM A 16-35
Axle steel bars ASTM A 160-39
Cold-drawn wire reinforcement ASTM A 82-34
Bar and rod mats ASTM A 184-37
Welded wire fabrics ASTM A 185-37

Federal Specification QQ-B-71 must be followed for Government orders.

(An earlier edition of SPR 26-42 and all the ASTM Standards listed above have received ASA approval as American Standards.)



Steel Wheels and Tires, Schedule 2—

Restricts production of steel wheels to the sizes and shapes set forth in the Association of American Railroads Tables 1 and 2 adopted April 29, 1942 and revised September 1, 1942, which form a part of Specification E-M-107-42, and also as listed in ASTM Specification A25-41, as amended by emergency alternate provisions EA-A25a adopted August 24, 1942.

There shall be no production of steel wheels except according to the following specifications:

Transit service:

Wrought steel wheels ASTM A25-41
Spun steel wheels ASTM A25-41

Railroad service:

Multiple wear type AAR-E-M-107-42
One wear type AAR-E-M-103-42
Heat-treated multiple wear type AAR-E-M-123-42

Export, industrial, and miscellaneous service:

Multiple wear type ASTM A57-39 as amended by Emergency Alternate Provision EA-A57, June 22, 1942.

Steel tires for railroad and transit service must also be produced according to certain specifications: AAR-E-M-106-42; ASTM A26-39; and AAR-E-M-124-42.

Barbed Wire, Wire Fence, Poultry Netting and Poultry Flooring (Schedule 3 to Limitation Order L-211)—

Restricts production of barbed wire to two-point barbed wire of 14-gauge strands and 16-gauge barbs, the spacing of the barbs to be not less than 4 inches, to be supplied on 80-rod spools. Styles, specifications, and size of rolls for wire fence, poultry netting, and poultry flooring are given. Copper is not to be used, and zinc coating is not to be applied except in accordance with Federal Specification QQ-W-461, Table IV, Weight A, June 16, 1941.

Office Machinery (General Limitation Order L-54-c, as amended November 11, 1942)—

Gives the Director General for Operations authority to issue schedules establishing simplified practices with respect to the types, sizes, forms, materials, or specifications of office machinery. Provides that electric motors may be incorporated in only 20 per cent of the spirit, gelatin, or stencil types of duplicating machines now being manufactured. No electric motors may be incorporated in adding machines.

Paper, Standardization and Simplification

Book Paper for Use in Commercial Printing (Schedule I to Limitation Order L-120, as amended and revised October 29, 1942)—

Provides a means of classifying book papers according to grades, colors, weights, and sizes. Manufacturers may then select a specified number of grades for production in each of the classifications.

Book Paper for Use in Book Publishing (Schedule II to Limitation Order L-120, as amended and revised October 29, 1942)—

Applies the classification as described above to book papers used for book publishing.

Fine Writing Papers (Schedule III)—

Provides a method of classification as described above for fine writing papers.

Tablet Paper (Schedule IV)—

Provides a method of classification for tablet paper.

Envelope Papers (Schedule V)

Provides a method of classification for envelope papers.

Rubber and Products and Materials of which Rubber Is a Component (Ration Order 1A)

Tires, Tubes, Recapping, and Camelback—

Defines Grades of tires for the purposes of this Ration Order.

Shirts (Exclusive of Work Shirts) and Pajamas (Limitation Order L-169)—

Defines "Preshrunk fabrics" as fabrics which have a residual shrinkage of not more than 2 per cent as determined by test methods for shrinkage given in "Woven Textile Fabrics, Testing and Reporting, Commercial Standard CS59-41" issued by the National Bureau of Standards.

"Unshrunk fabrics" means fabrics which have a residual shrinkage of more than 2 per cent as determined by test methods for shrinkage given in the Commercial Standard.

The order prohibits manufacture of shirts with a biswing or box-pleated back; shirts exceeding in length 30 inches for shrunk fabrics and 31½ inches for unshrunk fabrics; and shirts with pleated bosoms. It also prohibits pajamas with cuffs, sashes, or decorations such as pipings and frogs; and limits the styles of pajamas and night shirts.

Wall Paper (General Limitation Order L-177)—

Wall paper shall not be manufactured unless it conforms to the specifications set forth in Schedule 1. Schedule 1 limits the amount as well as the size and weight of wall paper which may be manufactured. It also reduces the number of styles that may be sampled in the 1942-1943 line.

Color for wall paper ground is limited to five colors defined by the Munsell hue designation, and giving the minimum and maximum values permissible.

Office of Price Administration

Apparel (Maximum Price Regulation 273)

Certain Articles of Apparel in which Materials Have Been Replaced—

Defines the term "same garments" as garments which have all of the following common characteristics:

(1) They are of the same specific classification and size as provided by the United States Department of Commerce, Commercial Standard CS 33-32;

(2) They have the same average finished weight for comparable size, within a tolerance of 3 per cent;

(3) They are knitted from the same kinds of yarn (for example, carded, combed, blended, or processed staple fiber yarns) and with the same percentage of fibers (for example, cotton, wool, or other fibers and mixtures thereof);

(4) They have a substantially equal number of courses and needles per inch;

(5) They have construction and trimmings of substantially equal quality and serviceability; and

(6) They are constructed and finished with substantially equal standards of workmanship.

When combed yarn has been replaced by carded yarn in a garment, the garment must be sold with a label attached bearing the symbol "R".

Beef, OPA Standard Primal Cuts (OPA-1208)—

All cuts of beef for the wholesale trade must now be made according to the measurements and guides specified by the Office of Price Administration. All grades now must be inspected and graded under the supervision of the U. S. Department of Agriculture.

Ferro-Alloys (Maximum Price Regulation 258)

Chrome Ores—

Sets maximum prices for metallurgical-chemical chrome ores by reference to the base analysis on a dry basis: Chromic oxide, 48 per cent; Chromium-iron ratio, 3.00:1.

Food and Food Products (Maximum Price Regulation 270)

Dry Edible Beans—

Sets prices on the basis of U. S. Grades set forth in the United States Standards for Beans issued by the United States Department of Agriculture.

Food and Food Products (Maximum Price Regulation 271)

Certain Perishable Food Commodities, Sales except at Retail—

Provides rules for establishing maximum prices for potatoes and onions on the basis of U. S. grades, and U. S. Standards issued by the U. S. Department of Agriculture.

Paper, Paper Products, and Raw Materials for Paper and Paper Products (Maximum Price Regulation 266)

Certain Tissue Paper Products—

Defines toilet tissue, paper towels, facial type toilet tissue, and wet-strength toilet tissue by basis weight and size of sheet. Wet-strength paper towels must have a wet-tensile strength of at least 1.5 pounds per inch width when tested according to TAPPI Method No. T404 M-41. The paper must also be capable of becoming at least 80 per cent saturated when submerged 10 seconds in water at room temperature and provided the ratio of the wet-tensile to the dry-tensile strength is at least 20 per cent.

Paper, Paper Products and Raw Materials for Paper and Paper Products (Revised Maximum Price Regulation 130)

Standard Newsprint Paper—

Defines "standard newsprint paper" and gives specifications for weight, size of rolls, size of sheets, content of paper stock, finish, ash content, degree of sizing, color, and thickness. Sets maximum prices and differentials by zones.

Rubber and Products and Materials of Which Rubber Is a Component (Maximum Price Regulation 107, Amendment 6)

Used Tires and Tubes—

Provides minimum quality specifications for repaired tires and tubes, and sets maximum prices for used tires of all types.

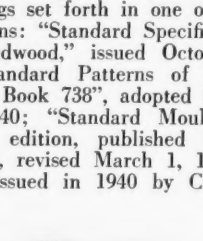
Retreaded and Recapped Rubber Tires, the Retreading and Recapping of Rubber Tires, and Basic Tire Carcasses (RPS 66)—

Provides minimum quality specifications and sets maximum prices.

Softwood Lumber (Maximum Price Regulation 253)

Redwood Lumber and Millwork—

Sets maximum prices for different grades, lengths, and thicknesses of redwood lumber and millwork. Unless otherwise specified, grades and classes of lumber or items, patterns, workings, and specifications used herein have the meanings set forth in one or more of the following publications: "Standard Specifications for Grades of California Redwood," issued October, 1936, revised May, 1940; "Standard Patterns of Worked Redwood Lumber, Pattern Book 738", adopted May 24, 1938 and revised June, 1940; "Standard Moulding Book (8000 Series)", fourth edition, published by Shattock and McKay Company, revised March 1, 1940; and "Frame Catalogue 140" issued in 1940 by California Redwood Distributors, Ltd.



Softwood Lumber (Maximum Price Regulation 19, Amendment 5)

Southern Pine Lumber—

Provides maximum prices on the basis of sizes and grades.

Softwood Lumber (Maximum Price Regulation 26, Amendment 9)

Douglas Fir and Other West Coast Lumber—

Establishes maximum prices for Douglas Fir ponton lumber on the basis of U. S. Army specifications.

Textile Fabrics: Cotton, Wool, Silk, Synthetics and Admixtures (MPR 127, Amendment 9)

Establishes prices for different types of goods made according to Government specifications when such goods are sold to any person other than a war procurement agency.

Wool (Maximum Price Regulation 123, Amendment 3)

Defines "Raw wool waste materials" as including the types, kinds, classifications, and grades of wool waste materials enumerated in Tables I through VI, regardless of the system of manufacture.

Office of Petroleum Coordinator for War

Processing and Refining Asphalt and Asphaltic Products (Recommendation 61)—

Provides that no asphalt or asphaltic products for paving purposes other than the grades specified shall be manufactured. These asphalt cements which may be manufactured are:

Asphalt cements: Penetration Ranges—50-60, 85-100, 120-150, 150-200, 200-300. Federal Specifications, SS-A-706a (November 26, 1940) and SS-R-406a (April 25, 1942).

Medium curing cutback asphalts: MC-1, MC-2, MC-3, MC-5. Federal Specifications, SS-A-671a (June 20, 1941) and SS-R-406a (April 25, 1942).

Rapid curing cutback asphalts: RC-1, RC-2, RC-3, RC-5. Federal Specifications, SS-A-671a (June 20, 1941) and SS-R-406a (April 25, 1942).

Emulsified asphalts: Types I, II, III, V. Federal Specifications, SS-A-674 (May 7, 1935) and SS-A-674, Amendment 1 (March, 1936).

Navy Department Issues Handbook of WPB Definitions

Materials and End Products Are Defined For Guidance of Navy Divisions

Definitions of materials and end products specified in "M" and "L" orders issued by the War Production Board through October 20, 1942 have been presented in a *Handbook of Definitions* just issued by the Conservation Division, U. S. Navy Department. The definitions, which are in the nature of standards on which the WPB orders are based, will be distributed to the agencies in the Navy charged with design, specification, requisition, production, inspection, and salvage of Navy material. Although prepared for the Office of Procurement and Material of the Navy, the definitions included in the *Handbook* are also of immense value to industry and others immediately concerned with the war effort.

The *Handbook* is made up of two parts. Part I contains definitions specified in "M" orders; Part II contains those in "L" orders. The "M" orders are the General Preference, Conservation, Import, Inventory, and other orders issued by the WPB covering the conservation of supply and the distribution of materials, usually raw materials. The "L" orders are the General Limitation Orders, which limit the production of certain items, especially consumers' durable goods.

The definitions are listed in each part in alphabetical order, and cross references are provided to facilitate the use of the book. The term defined is given first, followed by the WPB order number and title in which the definition is used. The definition is then cited as stated in the last amendment to the order, if any, as of October 20, 1942. When several definitions of the same material or end product, though differing slightly, are given in different orders, each definition is cited separately under the corresponding WPB order. When several definitions of the same material or end product are stated in the same order of its supplement, the reason is given in a footnote.

The *Handbook* is in loose-leaf form and it is planned to bring it up-to-date as the need arises from time to time.

Definitions and standards of identity for foods have been issued by the Food and Drug Administration, but this *Handbook* brings together for the first time official definitions of materials and end products. For this reason it is expected to be particularly valuable not only to the Navy Department but also to others concerned with war production and with standards work.

The *Handbook of Definitions of Materials and End Products* was prepared under the direction of Samuel P. Kaidanovsky, chief of the Consumer Standards Section, Consumers' Counsel Division, Agricultural Marketing Administration, U. S. Department of Agriculture.

ASA Standards Activities

Standards Available Since Our November Issue

Forged or Rolled Steel Pipe Flanges for General Service (ASTM A 181-42) Revision of American Standard G46.1-1942 25¢

Gypsum
- Gypsum Lath (ASTM C37-42) American Standard A67.1-1942 25¢
- Gypsum Wall Board (ASTM C36-42) American Standard A69.1-1942 25¢
- Gypsum Sheathing Board (ASTM C79-42) American Standard A68.1-1942 25¢
- Test for Gypsum and Gypsum Products (ASTM C-26-42) American Standard A70.1-1942 25¢

Materials for Boilers, Pressure Vessels, etc.
- Molybdenum-Steel Plates for Boilers and Other Pressure Vessels (ASTM A204-42) Revision of American Standard G34.1-1942 25¢
- Low-Carbon Nickel-Steel Plates for Boilers and Other Pressure Vessels (ASTM A203-42) Revision of American Standard G33.1-1942 25¢

Petroleum Products and Lubricants
- Test for Carbon Residue of Petroleum Products (Ramsbottom Carbon Residue) (ASTM D524-42) American Standard Z11.47-1942 25¢
- Test for Flash Point by Means of the Pensky-Martens Closed Tester (ASTM D93-42) American Standard Z11.7-1942 25¢
- Test for Gum Content of Gasoline (ASTM D381-42) American Standard Z11.36-1942 25¢
- Test for Melting Point of Paraffin Wax (ASTM D87-42) American Standard Z11.4-1942 25¢
- Test for Tetraethyl Lead in Gasoline (ASTM D526-42) American Standard Z11.48-1942 25¢
- Test for Vapor Pressure of Petroleum Products (Reid Method) (ASTM D323-42) (American Standard Z11.44-1942 25¢

Power-Operated Radio Receiving Appliances (UL 6th ed) American Standard C65.1-1942 25¢

Sampling and Analysis of Coal and Coke (ASTM D271-42) American Standard K18-1942 25¢

Structural Steel for Locomotives and Cars (ASTM A113-42) Revision of American Standard G39.1-1942 25¢

Wrought-Iron and Wrought-Steel Pipe and Tubing
- Specifications for Lap-Welded and Seamless Steel and Lap-Welded Iron Boiler Tubes (ASTM A83-42) American Standard B36.12-1942 25¢
- Specifications for Electric-Fusion-Welded Steel Pipe (Sizes 30 in. and over) (ASTM A134-42) American Standard B36.4-1942 25¢
- Specifications for Electric-Resistance-Welded Steel Pipe (ASTM A135-42) American Standard B36.5-1942 25¢
- Specifications for Electric-Fusion-Welded Steel Pipe (Sizes 8 in. to but not including 30 in.) (ASTM A139-42) American Standard B36.9-1942 25¢
- Specifications for Electric-Fusion-Welded Steel Pipe for High Temperature and High-Pressure Service (ASTM A155-42) American Standard B36.11-1942 25¢
- Specifications for Lap-Welded and Seamless Steel Pipe for High-Temperature Service (ASTM A106-42T) American Standard B36.3-1942 25¢

Standards Approved Since Our November Issue

Electrolytic Copper Wire Bars, Cakes, Slabs, Billets, Ingots and Ingot Bars (ASTM B5-42) American Standard H17.2-1942

Free-Cutting Brass Rod for Use in Screw Machines (ASTM B16-42) American Standard H8-1942

Lake Copper Wire Bars, Cakes, Slabs, Billets, Ingots and Ingot Bars (ASTM B4-42) American Standard H17.1-1942

Marking Compressed Gas Cylinders to Identify Content American Standard Z48.1-1942

Measurement of Test Voltage in Dielectric Tests American Standard C68.1-1942

Approval Withdrawn

Lock-Bar Steel Pipe (ASTM A137-34) American Standard B36.7-1935

Standards Being Considered by ASA for Approval

Abrasive Wheels, Safety Code for Use, Care and Protection of Revision of B7-1935

Alloy-Steel Castings for Valves, Flanges, and Fittings for Service at Temperatures from 750 to 1100 F (ASTM A157-41) Revision of G36.1-1942

Cast-Iron Pipe Flanges and Flanged Fittings, Class 250 (Revision of B16b-1928)

Central Heating Gas Appliances Revision of Z21.13-1940

Cold-Rolled Strip Steel (ASTM A109-38) G47

Colored Textiles, Fastness L14

Cranes, Derricks, and Hoists, Safety Code B30

Electrical Insulating Materials
- Laminated Round Rods Used in Electrical Insulation (ASTM D349-39) C59.15
- Laminated Tubes Used in Electrical Insulation (ASTM D348-39) C59.14
- Sheet Plate Materials Used in Electrical Insulation (ASTM C229-39) C59.13
- Test for Impact Resistance of Electrical Insulating Materials (ASTM D256-38) C59.11-1941
- Testing Molded Materials Used for Electrical Insulating (ASTM D48-39) C59.1-1940

Keyways for Holes in Gears B6.4

Lime
- Limestone, Quicklime, and Hydrated Lime, Methods of Chemical Analysis of (ASTM C25-29)
- Quicklime for Structural Purposes, Specifications for (ASTM C5-26)

Metal-Cleaning Sanitation, Code of Recommended Good Practices

Protection of Structures Containing Inflammable Liquids and Gases—Part 3 of Code for Protection Against Lightning (From status as American Tentative Standard to American Standard) C5, Part 3

Rotating Electrical Machinery on Railway Locomotives and Rail Cars and Trolley, Gasoline-Electric and Oil-Electric Coaches (Revision of C35-1936) C35

Rivets
- Small Rivets Addenda to B18a-1927
- Tinners', Coopers', and Belt Rivets Addenda to B18g-1928

Textile Testing Machines, Specifications for (ASTM D76-41) Revision of L15.1-1942

Threaded Cast-Iron Pipe for Drainage, Vent, and Waste Services

Standards Submitted for Consideration Since Our November Issue

Accelerated Aging of Vulcanized Rubber by the Oven Method (ASTM D573-41) Revision of American Standard J5.1-1942

Accelerated Aging of Vulcanized Rubber by the Oxygen-Pressure Method (ASTM D572-41 Revision of American Standard J4.1-1942

Allowable Concentration of Chromic Acid and Chromates Z37

Allowable Concentration of Mercury Z37

Alloy-Steel Castings for Structural Purposes ASTM A148-42

Carbon-Steel Castings for Miscellaneous Industrial Uses ASTM A27-42
Carbon-Steel Castings Suitable for Fusion Welding for Miscellaneous Industrial Uses ASTM A215-41
Lightning Arresters for A-C Power Circuits (AIEE No. 28) Revision of American Standard C62.1-1936
Markings for Grinding Wheels B5.17
Prevention of Dust Explosions, Safety Codes:
Aluminum Bronze Powder, Manufacture of Reaffirmation of Z12.11-1940
Coal Pneumatic Cleaning Plants Reaffirmation of Z12.7-1940
Country Grain Elevators Z12
Flour and Feed Mills Reaffirmation of Z12.3-1940
Grain Elevators and Storage Units, Suggested Good Practices for the Application of Suction and Venting for the Control of Dust Z12
Inert Gas for Fire and Explosion Prevention, Use of Revision of Z12.10-1940
Pulverized Fuel Systems Reaffirmation of Z12.1-1940
Spice Grinding Plants Reaffirmation of Z12.9-1940
Starch Factories Reaffirmation of Z12.2-1940
Sugar and Cocoa Reaffirmation of Z12.6-1940
Sulphur Dust Explosions and Fires Z12
Terminal Grain Elevators Reaffirmation of Z12.4-1940
Wood-Flour Manufacturing Establishments Reaffirmation of Z12.8-1940
Woodworking Plants Reaffirmation of Z12.5-1940
Zinc
Rolled Zinc ASTM B69-39
Slab Zinc (Spelter) ASTM B6-37

American War Standards

Standards Approved and Published

Accuracy of Engine Lathes B5.16-1941 25¢
Allowable Concentration of Cadmium Z37.5-1941 20¢
Code for Electricity Meters (Revision of Paragraph 827) C12WS-1942 10¢
Color, Specification and Description of Z44-1942 25¢
Domestic Gas Ranges, Approval Requirements Z21.1ES-1942 $1.00
Gas Water Heaters, Approval Requirements Z21.10WS-1942 $1.00
Machine Tool Electrical Standards C74-1942 40¢
Manganese, Allowable Concentration of Z37.6-1942 20¢
Photographic Exposure Computer Z38.2-1942 $1.00
Quality Control
Guide for Quality Control Z1.1-1941
Control Chart Method of Analyzing Data Z1.2-1941
} In one Volume 75¢
Control Chart Method of Controlling Quality During Production Z1.3-1942 75¢
Straight Screw Threads for High-Temperature Bolting B1.4-1942 25¢

War Standards Approved and Published Since Our November Issue

Fixed Mica-Dielectric Capacitors C75.3-1942 50¢
Protective Lighting for Industrial Properties A85-1942 50¢

Standards Under Way

Allowable Concentration of Ether Z37
Allowable Concentration of Xylene Z37
Allowable Concentration of Xylol Z37
Class 125 Cast-Iron Flanged Fittings B16a
Color Code for Lubricants for Machinery Z47
Color Fastness of Textiles, Terminology L14
Electrical Indicating Instruments
Goggles and Respiratory Equipment, Standardization and Simplification of
Men's Safety-Toe Work Shoes Z41.1

Standards Under Way—(Continued)

Military Radio Equipment and Parts C75:

1-2. Insulating Materials
(a) Ceramics
(b) Steatite
(c) Porcelain
(d) Glass
(e) Glass-Bonded Mica
(f) Treating, Filling, and Impregnating
(g) Plastics
(h) Plastic Communications Components
3. Capacitors—Fixed
(a) Ceramic Dielectric
(b) Paper Dielectric
(c) Electrolytic
4. Capacitors—Variable
(a) Receiver
(b) Transmitter
(c) Trimmer
5. Dynamotors and Similar Power Units
6. Crystals and Holders
(a) Physical Characteristics
(b) Specifications and Testing
(c) Reference Test Circuits
7. Resistors—Fixed
(a) Composition
(b) Wire Wound
(c) Instrument Type
8. Resistors—Variable
(a) Composition
(b) Wire Wound
9. Transformers
(a) Power
(b) Audio Frequency
(c) Radio Frequency
10. Tube Sockets
(a) Receiving
(b) Transmitting
(c) Cathode Ray
11. Connectors
(a) Telephone Plugs and Jacks
(b) Multicontact Plugs and Receptacles
12. Dry Batteries
(a) Single Cell
(b) Multicell
13. Vibrator Power Supplies

Packages for Electronic Tubes Z45
Pressure-Temperature Ratings for Steel Pipe Flanges and Flanged Fittings B16e5
Threading of General Purpose Nuts and Bolts B1

New Projects Approved

Children's Sizes L11
Replacement Parts for Civilian Radio
Welding Arc Hand Shields and Helmets

Standard Markings Will Simplify Orders for Grinding Wheels

A proposed American Standard for the markings on grinding wheels is now being considered by the Mechanical Standards Committee of the American Standards Association.

The standard is intended to eliminate the diversity of grinding wheel markings used by the various manufacturers, and covers all the various types and grades of grinding wheels now used. Marking wheels according to the standard markings will simplify ordering and stocking wherever a quantity is kept on hand. The standard is also expected to help the grinding wheel manufacturer in selecting a wheel that will be suitable for the intended work.

USTRIAL STANDARIZATION
COMMERCIAL STANDARDS MONTHLY

FEB. 1942
PART 3

ASA

4201
February 1, 1942

AMERICAN STANDARDS

AMERICAN STANDARDS ASSOCIATION
29 West 39th St. New York

Explanation of abbreviations used in cross references

AAR Association of American Railroads
AIEE American Institute of Electrical Engineers
API American Petroleum Institute
ASTM American Society for Testing Materials
ASRE American Society of Refrigerating Engineers
Bur.Mines TP Bureau of Mines Technical Paper
Bur. Stds. National Bureau of Standards
CS Commercial Standard
FS Federal Specification
Lab.Stat.Bull. United States Bureau of Labor Statistics Bulletin
NBFU National Board of Fire Underwriters
SPR Simplified Practice Recommendation

A star (*) indicates standards approved since the last (May 1941) issue of the Price List

(Due to the cost of billing and carrying charges on small orders, will you please enclose your remittance with your order? Company Members of ASA are entitled to 20 per cent discount.)

A complete set of all the American Standards listed for sale in this pamphlet may be obtained at the special price of $125 per set.

A—CIVIL ENGINEERING AND CONSTRUCTION

		Price
A1a-1931	Portland Cement, Specifications	Under revision
A1.2-1933	Portland Cement, Methods of Sampling and Testing ..	Under revision
A2-1934	Fire Tests of Building Construction and Materials (ASTM C19-33)	.25
A5-1930	Toughness of Rock, Method of Test for (ASTM D3-18)	.25
A6-1925	Drain Tile, Specifications for (ASTM C4-24)	.25
A9-1940	Building Exits Code ...	Under revision
A10.1-1939	Manual of Accident Prevention in Construction	$2.00
A11-1930	Lighting Factories, Mills and Other Work Places, Code of ...	In press
A12-1932	Floor and Wall Openings, Railings and Toe Boards, Safety Code for	.20
A13-1928	Identification of Piping Systems, Scheme for	.50
A14-1935	Ladders, Safety Code for Construction, Care and Use of	.25
A17.1-1937	Elevators, Dumbwaiters and Escalators, Safety Code for	1.00

		Price
A17.2-1937	Inspection of Elevators, American Recommended Practice for (Inspectors' Manual)	.75
A19-1937	Voids in Aggregates for Concrete, Method of Test for (ASTM C30-37)	.25
A21.1-1939	Computation of Strength and Thickness of Cast-Iron Pipe	.40
A21.2-1939	Cast-Iron Pit Cast Pipe for Water or Other Liquids, Specifications for	.20
A21.4-1939	Cement Mortar Lining for Cast-Iron Pipe and Fittings, Specifications for	.15
A23-1938	School Lighting, Standards of	.25
A26-1930	Stone, Slag, Gravel, Sand and Stone Block for Use as Highway Materials, Methods of Sampling (ASTM D75-22)	Under revision
A31-1924	Materials for Cement Grout Filler for Brick and Stone Block Pavements, Specifications for (ASTM D57-20)	.25
A35.1-1941	★Manhole Frames and Covers for Subsurface Structures	In press
A37.1-1930	Penetration of Bituminous Materials, Method of Test for (ASTM D5-25)	.25
A37.2-1930	Bituminous Materials, Method of Float Test for (ASTM D139-27)	.25
A37.3-1930	Determination of Bitumen, Method of Test for (ASTM D4-27)	.25
A38-1933	Steel Reinforcing Spirals (SPR 53-32)	.05
A39-1933	Window Cleaning, Safety Code for	.20
A40.1-1935	Cast Iron Soil Pipe and Fittings	.65
A40.2-1936	Brass Fittings for Flared Copper Tubes	.35
A40.3-1941	Soldered-Joint Fittings	.45
A40.4-1942	★Air Gaps in Plumbing Systems	In press
A42.1-1938	Gypsum Plastering Including Requirements for Lathing and Furring	.25
A47-1932	Steel Reinforcing Bars (SPR 26-30)	.05
A48-1932	Forms for Concrete Joist Construction Floors (SPR 87-32)	.05
A49.1-1941	★Gypsum, Specifications for (ASTM C22-41)	.25
A49.3-1940	Gypsum Plasters, Specifications for (ASTM C28-40)	.25
A49.4-1940	Gypsum Molding Plaster, Specifications for (ASTM C59-40)	.25
A49.5-1940	Gypsum Pottery Plaster, Specifications for (ASTM C60-40)	.25
A50.1-1939	Billet-Steel Concrete Reinforcement Bars, Specifications for (ASTM A15-39)	.25
A50.2-1936	Rail-Steel Concrete Reinforcement Bars (ASTM A16-35)	.25
A50.3-1936	Cold-Drawn Steel Wire for Concrete Reinforcement (ASTM A82-34)	.25
A59.1-1941	Reinforced Gypsum Concrete, Building Code Requirements	.25
A65.1-1941	★Calcined Gypsum for Dental Plasters, Specifications for (ASTM C72-40)	.25
A66.1-1941	★Keene's Cement, Specifications for (ASTM C61-40)	.25
A67.1-1941	★Gypsum Lath, Specifications for (ASTM C37-40)	.25
A68.1-1941	★Gypsum Sheathing Board, Specifications for (ASTM C79-34)	.25
A69.1-1941	★Gypsum Wall Board, Specifications for (ASTM C36-34)	.25
A70.1-1941	★Testing Gypsum and Gypsum Products, Methods of (ASTM C26-40)	.25
A73.1-1942	★Concrete Masonry Units for Construction of Catch Basins and Manholes (ASTM C139-39)	.25

For standard abbreviations and symbols in civil engineering, see serial no. Z10.

B—MECHANICAL ENGINEERING

		Price
B1.1-1935	Screw Threads for Bolts, Nuts, Machine Screws and Threaded Parts	.60
B1.2-1941	★Screw Thread Gages and Gaging	.60
B1.3-1941	★Acme and Other Translating Threads	.45
B2-1919	Pipe Threads	Under revision—Out of print
B3.1-1933	Annular Ball Bearings — Single Row Type and Separable (Open) Type	.40
B3.2-1930	Annular Ball and Roller Bearings —Wide Type	
B3.3-1933	Angular Contact Type Ball Bearings	
B4a-1925	Tolerances, Allowances and Gages for Metal Fits	.50
B5b-1929	Tool Holder Shanks and Tool Post Openings, Dimensions of	.25
B5c-1930	Milling Cutters	.75
B5.1-1941	★T-Slots—Their Bolts, Nuts, Tongues and Cutters (supersedes B5a-1927)	.35
B5.4-1939	Taps, Cut and Ground Threads	1.25
B5.5-1932	Rotating Air Cylinders and Adapters	.35
B5.6-1941	★Jig Bushings	.35
B5.7-1936	Circular and Dovetail Forming Tool Blanks	.40
B5.8-1936	Chucks and Chuck Jaws	.45
B5.9-1936	Lathe Spindle Noses	.50
B5.10-1937	Machine Tapers	.50
B5.11-1937	Adjustable Adapters for Multiple Spindle Drilling Heads	.50
B5.12-1940	Twist Drills, Straight Shank	.55
B5.13-1939	Single-Point Cutting Tools, Terminology and Definitions for	.40
B5.15-1939	Reamers	.75
B5.14-1941	★Involute Splines, Side Bearing	.65
B5.16-1941	★Accuracy of Engine Lathes (American Defense Emergency Standard)	.25
B6.1-1932	Spur Gear Tooth Form	.45
B6.2-1933	Gear Materials and Blanks	.50
B6.3-1940	Backlash for General Purpose Spur Gearing	.25
B7-1935	Abrasive Wheels, Safety Code for the Use, Care and Protection of	.15
B8-1932	Protection of Industrial Workers in Foundries, Safety Code for	.20
B9-1939	Mechanical Refrigeration, Safety Code for (ASRE Circular No. 15)	.20
B11-1937	Power Presses and Foot and Hand Presses, Safety Code for	.50
B13-1924	Logging and Sawmill Safety Code. (Bur. Stds. Handbook 5)	Under revision—Out of print
B15-1927	Mechanical Power Transmission Apparatus, Safety Code for	.35
B16a-1939	Cast Iron Pipe Flanges and Flanged Fittings, Class 125	.60
B16b-1928	Cast Iron Pipe Flanges and Flanged Fittings for Maximum WSP of 250 lbs	.50
B16b1-1931	Cast Iron Pipe Flanges and Flanged Fittings for 800 lbs Hydraulic Pressure	.35
B16b2-1931	Cast Iron Pipe Flanges and Flanged Fittings for Maximum WSP of 25 lbs	.40
B16c-1939	Malleable-Iron Screwed Fittings, 150 lb	.50
B16d-1941	Cast Iron Screwed Fittings for Maximum WSP of 125 and 250 lbs	.40
B16e-1939	Steel Pipe Flanges and Flanged Fittings (for maximum WSP of 150 to 2500 lb per sq in., including welding neck flanges) with Addendum B16e4-1940	1.25
B16e2-1936	Pipe Plugs of Cast Iron, Malleable Iron, Cast Steel or Forged Steel	.35

(See beginning for list of abbreviations and keying)

		Price
B16g-1929	Cast Iron Long Turn Sprinkler Fittings (includes also B16g1-1937)	.50
B16.9-1940	Steel Butt-Welding Fittings	.40
B16.10-1939	Face-to-face Dimensions of Ferrous Flanged and Welding End Valves	.55
B17c-1927	Transmission Shafting, Code for Design of	.75
B17f-1930	Woodruff Keys, Keyslots and Cutters	.35
B17.1-1934	Shafting and Stock Keys	.45
B18a-1927	Small Rivets	.30
B18c-1930	Slotted Head Proportions, Machine Screws, Cap Screws and Wood Screws	.45
B18d-1930	Track Bolts and Nuts	.40
B18f-1928	Plow Bolts, Dimensions of	.35
B18g-1929	Tinners', Coopers' and Belt Rivets	.35
B18.2-1941	Wrench-Head Bolts and Nuts and Wrench Openings	.65
B18.3-1936	Socket Set Screws and Socket Head Cap Screws	.40
B18.4-1937	Large Rivets	.65
B18.5-1939	Round Unslotted Head Bolts	.50
B19-1938	Compressed Air Machinery and Equipment, Safety code for	.30
B24-1927	Forging and Hot Metal Stamping, Safety Code for (Lab. Stat. Bull. 451) **Under revision—Out of print**	
B26-1925	Fire Hose Coupling Screw Thread	.25
B28a-1927	Rubber Mills and Calenders, Safety Code for (Lab. Stat. Bull. 447)	.05
B29a-1930	Roller Chains, Sprockets and Cutters **Under revision—Out of print**	
B31.1-1935	Pressure Piping, Code for	1.00
B32.1-1941	★Preferred Thicknesses for Uncoated Thin Flat Metals (Under 0.250 In.)	.25
B33.1-1935	Hose Coupling Screw Threads	.25
B36.1-1940	Welded and Seamless Steel Pipe (ASTM A53-40)	.25
B36.2-1939	Welded Wrought-Iron Pipe (ASTM A72-39)	.25
B36.3-1940	Lap-Welded and Seamless Steel Pipe for High-Temperature Service (ASTM A106-40)	.25
B36.4-1939	Electro-Fusion-Welded Steel Pipe (Sizes 30 in. and over) (ASTM A134-39)	.25
B36.5-1935	Electric-Resistance-Welded Steel Pipe (ASTM A135-34)	.25
B36.6-1935	Forge-Welded Steel Pipe (ASTM A136-34)	.25
B36.7-1935	Lock-Bar Steel Pipe (ASTM A137-34)	.25
B36.8-1935	Riveted Steel and Wrought-Iron Pipe (ASTM A138-34)	.25
B36.9-1939	Electric-Fusion-Welded Steel Pipe (sizes 8 in. to but not including 30 in.) (ASTM A139-39)	.25
B36.10-1939	Wrought-Iron and Wrought-Steel Pipe	.50
B36.11-1939	Electric-Fusion-Welded Steel Pipe for High Temperature and High-Pressure Service, Specifications for (ASTM A155-36)	.25
B38c1-1931	Testing Domestic Refrigerators Using Ice, Code for	.20
B40.1-1939	Indicating Pressure and Vacuum Gages	.40
B45.1-1932	Foundry Patterns of Wood (CS 19-32) **Out of print**	
*B46	Surface Roughness, Proposed American Standard	.30
B47.1-1941	Gage Blanks (CS8-41)	.15

*Entries listed without a date are **Proposed American Standards** or **Proposed American Recommended Practices** that are available at the prices indicated, pending final approval. Comments or criticisms are welcome.

		Price
B48.1-1933	Inch-Millimeter Conversion for Industrial Use	.20
B49-1932	Shaft Couplings, Integrally Forged Flange Type for Hydro-Electric Units	.35

For standard abbbreviations and symbols in mechanical engineering, see serial no. Z10.

C—ELECTRICAL ENGINEERING

		Price
C1-1940	National Electrical Code (NBFU Pamphlet No. 70)	.05
C2	National Electrical Safety Code **(sold separately—see below)**	
C2.1-1941	Safety Rules for the Installation and Maintenance of Electrical Supply Stations (Bur. Stds. Handbook 31)	.10
C2.2-1941	★Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines (Bur. Stds. Handbrook 32—supersedes Handbook 10)	.65
C2.3-1941	Safety Rules for the Installation and Maintenance of Electric Utilization Equipment (Bur. Stds. Handbook 33)	.15
C2.4-1939	Safety Rules for the Operation of Electric Equipment and Lines (Bur. Stds. Handbook 34)	.10
C2.5-1940	Safety Rules for Radio Installations (Bur. Stds. Handbook 35)	.10
C5	Code for Protection Against Lightning	.15
C5.1-1937	Part I, Protection of Persons	
C5.2-1937	Part II, Protection of Buildings and Miscellaneous Property	
C5.3-1937	Part III, Protection of Structures Containing Inflammable Liquids and Gasses (Bur. Stds Handbook 21)	
C6-1938	Rotation, Connections and Terminal Markings for Electric Power Apparatus	1.00
C8k1-1932	Weatherproof (Weather Resisting) Wires and Cables (AIEE 72-1932)	.20
C8k2-1932	Heat Resisting Wires and Cables (AIEE 73-1932)	
C8.1-1932	Wires and Cables, Definitions and General Standards for (AIEE 30-1937)	.40
C8.5-1936	Cotton-Covered Round Copper Magnet Wire	.30
C8.6-1936	Silk-Covered Round Copper Magnet Wire	
C8.7-1936	Enameled Round Copper Magnet Wire	
C8.10-1938	Impregnated Paper Insulation of Ordinary Type for Lead Covered Power Cables, Specifications for **Under revision**	
C8.11-1936	Code Rubber Insulation for Wire and Cable for General Purposes.	.20
C8.12-1935	Cotton Braid for Insulated Wire and Cable	.20
C8.13-1937	Varnished Cloth Insulation for Lead Covered or Braid Covered Power Cable	.40
C8.14-1938	Bare Concentric-Stranded Copper Cable for Insulated Conductors: Hard, Medium-Hard or Soft	.30
C8.15-1938	Metallic Coverings, Specifications for	.20
C8.16-1940	Rubber-Insulated Tree Wire, Specifications for	.20
C8.17-1936	Class AO 30% Rubber Insulation for Wire and Cable for General Purposes	.20
C8.18-1936	Weather-Resistant (Weather proof) Wire and Cable—URC Type	.20

(See beginning for list of abbreviations and keying)

		Price
C8.19-1939	Weather Resistant Saturants and Finishes for Aerial Rubber Insulated Wire and Cable	.20
C8.20-1939	Heavy Wall Enamelled Round Copper Magnet Wire	.20
C10-1924	Electrical Equipment of Buildings, Standard Symbols for (AIEE 42-1923)	Under revision—Out of print
C11-1927	Hard Drawn Aluminum Conductors, Physical and Electrical Properties (AIEE 46-1927)	.20
C12-1941	Electricity Meters, Code for	2.00
C13-1926	Tubular Steel Poles, Specifications for	.25
C15-1935	750 Volt Direct Suspension Overhead Trolley Contact Construction	Out of print
C16.2-1939	Vacuum Tube Base and Socket Dimensions	.20
C16.3-1939	Manufacturing Standards Applying to Broadcast Receivers	.20
C18-1941	Dry Cells and Batteries, Specifications for	In press
C19-1928	Industrial Control Apparatus, (AIEE 15-1928)	.40
C22-1925	Instrument Transformers (AIEE 14-1925)	Under revision—see C57.1
C29a-1930	Insulator Tests (AIEE 41-1930)	.30
C33a-1929	Outlet Boxes, Standard	Out of print
C35-1936	Railway Motors and Other Rotating Electrical Machinery on Rail Cars and Locomotives (AIEE 11-1937)	.50
C37.1-1937	Relays Associated with Power Switchgear	.40
C37.2-1937	Automatic Stations	.40
*C37.4	Alternating-Current Power Circuit Breakers, Proposed American Standard for	.60
*C37.5	Methods for Determining the Rms Value of a Sinusoidal Current Wave and a Normal Frequency Recovery Voltage, Proposed American Recommended Practice for	
*C37.6	Schedule of Preferred Circuit-Breaker Ratings, Proposed American Recommended Practice for	
*C37.7	Operating Duty (Duty Cycle) for Standard and Reclosing Service, Proposed American Recommended Practice for	
*C37.8	Rated Control Voltages, Proposed American Recommended Practice for	
*C37.9	Test Code for Oil Circuit Breakers, Proposed American Recommended Practice for	
C39.1-1938	Electrical Indicating Instruments (AIEE 33-1937)	.40
C40-1928	Storage Batteries (AIEE 36-1928)	.20
C42-1941	★Definitions of Electrical Terms	In press
C44-1931	Rolled Threads for Screw Shells of Electric Sockets and Lamp Bases	.35
C48-1931	Electric Railway Control Apparatus, Standards for (AIEE 16-1933)	.40
C50-1936	Rotating Electrical Machinery (definitions, classification, rating, acceptance test conditions, for d-c machines, synchronous machines, synchronous converters, induction machines and fractional hp motors; supersedes AIEE stds 5, 7, 8, 9, 10)	1.50
C52.1-1933	Electric Arc Welding Apparatus (AIEE 38-1934)	.40
C52.2-1933	Resistance Welding Apparatus (AIEE 39-1934)	.30
C55-1932	Transformers, Recommended Practice in the Temperature Operation of (AIEE 100-1930)	Under revision—see C57.1
C55-1934	Capacitors, Standards for (AIEE 18-1934)	.20
C57.1-1933	Transformers, Constant Current (AIEE 12-1934)	Under revision—see following
*C57.1	Transformers, Regulators, and Reactors, Proposed American Standards	.75
*C57.2	Test Code for Transformers, Regulators, and Reactors, Proposed American Recommended Practice	
*C57.3	Guides for Operation of Transformers, Proposed American Recommended Practice	
C59.1-1940	Testing Molded Materials Used for Electrical Insulation (ASTM D 48-39)	.25
C59.2-1941	Electrical Insulating Oils, Methods of testing (ASTM D117-40)	.25
C59.3-1939	Insulation Resistance of Electrical Insulating Materials, Methods of Test for (ASTM D257-38)	.25
C59.4-1935	Rubber Matting for Use Around Electrical Apparatus or Circuits Not Exceeding 3000 Volts to Ground (ASTM D178-24)	.25
C59.6-1939	Rubber Insulating Tape, Specifications for (ASTM D119-38)	.25
C59.10-1941	Molding Powders Used in Manufacturing Molded Electrical Insulators, Methods of Testing (ASTM D392-38)	.25
C59.11-1941	★Impact Resistance of Electrical Insulating Materials, Methods of Test for (ASTM D256-38)	.25
C62-1936	Lightning Arresters (AIEE 28-1936)	.30
C64-1935	Brushes, Carbon, Graphite and Metal-Graphite	.30
C65-1938	Power-operated Radio Receiving Appliances	.25
C73-1941	★Attachment Plugs and Receptacles	.30

For standard abbreviations and symbols in electrical engineering, see serial no. Z10.

D—AUTOMOTIVE

D3-1927	Colors for Traffic Signals, Safety Code for	.25
D6-1935	Manual on Uniform Traffic Control Devices for Streets and Highways	.50
D7.1-1941	★Inspection Requirements for Motor Vehicles (supersedes D7-1939)	.25
D8-1937	Railroad Highway Grade Crossing Protection (AAR Bulletin No. 2)	.10

E—TRANSPORTATION

E2-1923	Design for Joint Plates for Seven-Inch Girder-Grooved and Guard Rails	.20
E3-1923	Design for Joint Plates for Nine-Inch Girder Grooved and Guard Rails	.20
E4-1933	Design for Seven-Inch Girder Grooved Rail	.10
E5-1933	Design for Nine-Inch Girder Grooved Rail	.10
E6-1933	Design for Seven-Inch Girder Guard Rail	.10
E7-1933	Design for Nine-Inch Girder Guard Rail	.10

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(See beginning for list of abbreviations and keying)

		Price
E8-1933	Seven-Inch, 82 lb Plain Girder Rail and Splice Bars	.10
E9-1933	Seven-Inch, 92 lb Plain Girder Rail and Splice Bars	.10
E11-1933	Seven-Inch, 102 lb Plain Girder Rail and Splice Bars	.10

G—FERROUS MATERIALS AND METALLURGY

G8b1-1931	Zinc-Coated (Galvanized) Sheets (ASTM A93-27)	.25
G8.1-1933	Zinc Coatings on Structural Steel Shapes, Plates and Bars and Their Products (ASTM A123-33)	.25
G8.3-1935	Zinc-Coated (Galvanized) Iron or Steel Telephone and Telegraph Line Wire (ASTM A111-33)	.25
G8.4-1935	Zinc-Coated (Galvanized) Iron or Steel Tie Wires (ASTM A112-33)	.25
G8.5-1935	Zinc-Coated Iron or Steel Chain-Link Fence Fabric Galvanized After Weaving (ASTM A117-33)	.25
G8.6-1935	Zinc-Coated (Galvanized) Iron or Steel Wire Strand (Cable) (ASTM A122-33)	.25
G8.7-1941	★Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Pipe for Ordinary Uses (ASTM A120-41)	.25
G8.8-1937	Zinc-Coated (Galvanized) Wrought Iron Sheets (ASTM A163-36)	Under revision
G9.1-1933	Carbon-Steel and Alloy-Steel Blooms, Billets and Slabs for Forgings (ASTM A17-29)	.25
G12-1936	Refined Iron Bars (ASTM A41-36)	.25
G17.1-1942	★Carbon-Steel Castings for Valves, Flanges, and Fittings for High-Temperature Service, Specifications for (ASTM A95-41)	.25
G17.2-1939	Alloy-Steel Bolting Material for High-Temperature Service, Specifications for (ASTM A96-39)	.25
G17.3-1940	Forged or Rolled Steel Pipe Flanges for High-Temperature Service, Specifications for (ASTM A105-40)	.25
G20-1939	Mild Steel Plates, Specifications for (ASTM A10-39)	.25
G21-1939	Structural Rivet Steel, Specifications for (ASTM A141-39)	.25
G23-1939	Uncoated Wrought-Iron Sheets, Specifications for (ASTM A162-39)	.25
G24-1939	Steel for Bridges and Buildings, Specifications for (ASTM A7-39)	.25

H—NON-FERROUS MATERIALS AND METALLURGY

H4.1-1940	Soft or Annealed Copper Wire, Specifications for (ASTM B3-39) (supersedes C8b2)	.25
H4.2-1941	Hard-Drawn Copper Wire, Specifications for (ASTM B1-40) (supersedes H14)	.25
H4.3-1941	Medium-Hard-Drawn Copper Wire, Specifications for (ASTM B2-40)	.25
H4.4-1940	Tinned Soft or Annealed Copper Wire for Electrical Purposes, Specifications for (ASTM B33-39) (supersedes C8b1 and H16)	.25
H4.5-1940	Bronze Trolley Wire, Specifications for (ASTM B9-39) (supersedes H22.1)	.25
H4.6-1940	Copper Trolley Wire, Specifications for (ASTM B47-39) (supersedes H22.2)	.25
H4.7-1940	Hot-Rolled Copper Rods for Electrical Purposes, Specifications for (ASTM B49-39)	.25
H7-1939	Copper-Base Alloy Forging Rods, Bars, and Shapes, Specifications for (ASTM B124-39T)	.25
H8-1941	★Free-Cutting Brass Rod for Use in Screw Machines, Specifications for (ASTM B16-41)	.25
H11-1924	Solder Metal (ASTM B32-21)	Under revision
H13-1925	Plumbago Crucibles for Non-Tilting Furnaces in Non-Ferrous Foundry Practice, Outside Dimensions of	.30
H17.1-1932	Lake Copper Wire Bars, Cakes, Slabs, Billets, Ingots and Ingot Bars (ASTM B4-27)	.25
H17.2-1932	Electrolytic Copper Wire Bars, Cakes, Slabs, Billets, Ingots and Ingot Bars (ASTM B5-27)	.25
H23.1-1941	★Copper Water Tube, Specifications for (ASTM B88-41)	.25

J—RUBBER

J1.1-1942	★Sample Preparation for Physical Testing of Rubber Products, Methods of (ASTM D15-41)	.25
J2.1-1942	★Tension Testing of Vulcanized Rubber, Methods of (ASTM D412-41)	.25
J3.1-1942	★Adhesion of Vulcanized Rubber (Friction Test), Methods of Test for (ASTM D413-39)	.25
J4.1-1942	★Accelerated Aging of Vulcanized Rubber by the Oxygen-Pressure Method, Method of Test for (ASTM D572-41)	.25
J5.1-1942	★Accelerated Aging of Vulcanized Rubber by the Oven Method, Method of Test for (ASTM D573-41)	.25

K—CHEMICAL INDUSTRY

K2-1927	Gas Safety Code	.20
K3-1935	Manganese Bronze, Methods of Chemical Analysis (ASTM B27-35)	.25
K4-1921	Gun Metal, Methods of Chemical Analysis of (ASTM B28-36T)	.25
K5-1922	Alloys of Lead, Tin, Antimony and Copper, Methods of Chemical Analysis of (ASTM B18-36T)	.25
K12-1921	Battery Assay of Copper, Methods of (ASTM B34-20)	.25
K13-1930	Gas-Mask Canisters, Code for Identification (Lab. Stat. Bull. 512)	.05
K14-1930	Liquid Soap, Specifications for (FS P-S-618)	.05
K15-1939	Chemical Analysis of White Pigments, Methods of (ASTM D34-39)	.25
K16.1-1937	Dry Red Lead, Methods of Routine Analysis (ASTM D49-37)	.25
K18-1940	Coal and Coke, Methods of Laboratory Sampling and Analysis of (ASTM D271-40)	.25
K20.1-1936	Cubic Foot Weight of Crushed Bituminous Coal, Method of Test for (ASTM D291-29)	.25
K20.2-1936	Cubic Foot Weight of Coke, Method of Test for (ASTM D292-29)	.25
K20.3-1936	Coke, Method of Tumbler Test for (ASTM D294-29)	.25
K20.4-1936	Coke, Method of Shatter Test for (ASTM D141-23	.25
K20.5-1936	Volume of Cell Space of Lump Coke, Method of Test for (ASTM D167-24)	.25
K21.1-1936	Determination of Toluol Insoluble Matter in Rosin (Chiefly Sand, Chips, Dirt and Bark), Method of Test for (ASTM D269-30)	.25
K22-1941	★Zinc Oxide, Specifications for (ASTM D79-41)	.25
K23-1941	★Basic Carbonate White Lead, Specifications for (ASTM D81-41)	.25
K24-1941	★Red Lead, Specifications for (ASTM D83-41)	.25

(See beginning for list of abbreviations and keying)

		Price
K25-1941	★Mineral Iron Oxide, Specifications for (ASTM D84-41)	.25
K26-1941	★Lampblack, Specifications for (ASTM D209-41)	.25
K27-1941	★Chrome Yellow, Specifications for (ASTM D211-41)	.25
K28-1941	★Reduced Chrome Green, Specifications for (ASTM D213-41)	.25
K29-1941	★Prussian Blue, Specifications for (ASTM D261-41)	.25
K31-1941	★Reduced Para Red, Specifications for (ASTM D264-41)	.25
K32-1937	Spirits of Turpentine, Specifications for (ASTM D13-34)	.25
K33-1937	Sampling and Testing Turpentine, Methods of (ASTM D233-36)	.25
K34-1937	Raw Linseed Oil, Specifications for (ASTM D234-28)	.25
K35-1937	Boiled Linseed Oil, Specifications for (ASTM D260-33)	.25
K36-1941	★Bone Black, Specifications for (ASTM D210-41)	.25
K37-1941	★Chrome Oxide Green, Specifications for (ASTM D263-41)	.25
K41-1939	Specific Gravity of Pigments, Methods of Test for (ASTM D153-39)	.25
K42-1937	Coarse Particles in Dry Pigments and Coarse Particles and Skins in Mixtures of Pigments and Vehicles, Methods of test for (ASTM D185-37)	.25
K44-1937	Yellow, Orange, Red and Brown Pigments Containing Iron and Manganese, Methods of Routine Analysis of (ASTM D50-36)	.25
K45-1941	★Titanium Dioxide Pigments, Specifications for (ASTM D476-41)	.25
K46-1940	Sampling Coal for Analysis, Method of (ASTM D21-40)	.25
K47-1941	★Basic Sulfate White Lead Specifications for (ASTM D82-38)	.25
K48-1941	★Blue Lead; Basic Sulfate, Specifications for (ASTM D405-38)	.25
K49-1941	★C. P. Para Red Toner, Specifications for (ASTM D475-40)	.25
K50-1941	★C. P. Zinc Yellow (Zinc Chromate), Specifications for (ASTM D478-40)	.25
K51-1941	★Alkalinity or Acidity of Pigments, Method of Test for (ASTM D278-31)	.25
K52-1941	★Bleeding of Pigments, Methods of Test for (ASTM D279-31)	.25
K53-1941	★Hygroscopic Moisture (and Other Matter Volatile Under the Test Conditions) in Pigments, Method of Test for (ASTM D280-33)	.25
K54-1941	★Oil Absorption of Pigments, Method of Test for (ASTM D 281-31)	.25
K55-1941	★Acetone Extract in Dry Lampblack and Dry Bone Black, Method of Test for (ASTM D 305-31)	.25
K56-1941	★Tinting Strength of White Pigments, Method of Test for (ASTM D332-36)	.25
K57-1941	★Mass Color and Tinting Strength of Color Pigments, Method of Test for (ASTM D387-36)	.25
K58-1941	★Yellow and Orange Pigments Containing Chromium Compounds, Blue Pigments, and Chrome Green, Methods of Chemical Analysis of (ASTM D-126-36)	.25
K59-1941	★Dry Mercuric Oxide, Method of Chemical Analysis of (ASTM D284-33)	.25

L—TEXTILE INDUSTRY

		Price
L1-1929	Textile Safety Code (Lab. Stat. Bull. 509)	.05
L3.1-1941	Cotton Rubber-Lined Fire Hose for Public and Private Fire Department Use, Specifications for (ASTM D296-38)	.25
L5-1939	Woven Textile Fabrics, General Methods of Testing (ASTM D39-39)	.25
L10-1936	Shrinkage in Laundering of Woven Cotton Cloth, Method of Test for (ASTM D437-36)	.25
L11.1-1941	★Body Sizes for Boys' Garments	.25
L13.1-1942	★Tubular Sleeving and Braids, Methods of Testing and Tolerances for (ASTM D354-41)	.25

M—MINING

M2-1926	Installing and Using Electrical Equipment in Coal Mines, Safety Rules for (Bur. Mines TP 402)	Out of print
M5-1932	Screen Testing of Ores (Hand Method), Methods for	.25
M6-1931	Drainage of Coal Mines, Recommended Practice for	.40
M7.1-1933	Frogs, Switches and Turnouts for Coal Mine Tracks (20 to 60 lb rail)	.30
M7.2-1935	Frogs, Switches and Turnouts for Coal Mine Tracks for 70 lb and 80 lb Rail	
M10-1928	Miscellaneous Outside Coal Handling Equipment, Recommended Practice for	Out of print
M11-1927	Wire Rope for Mines, Specifications and Recommended Practice in Use at Mines	.25
M12-1928	Ladders and Stairs for Mines, Construction and Maintenance of	.25
M13-1925	Rock Dusting Coal Mines to Prevent Coal Dust Explosions, Recommended Practice for	.25
M14-1930	Explosives in Bituminous Coal Mines, Recommended Practice for the Use of	.25
M15-1931	Coal Mine Transportation, Safety Code for	.20
M17-1930	Fire Fighting Equipment in Metal Mines (mimeographed)	gratis
M18-1928	Underground Transportation in Metal Mines (mimeographed)	gratis
M19-1928	Mechanical Loading Underground in Metal Mines, Recommended Practice in	Out of print
M20.1-1938	Classification of Coals by Rank (ASTM D388-38)	.25
M20.2-1937	Classification of Coals by Grade (ASTM D389-37)	.25
M20.3-1938	Designating the Size of Coal from its Screen Analysis (ASTM D431-38)	.25
M20.4-1939	Varieties of Bituminous and Subbituminous Coals, Definitions for (ASTM D493-39)	.25
M24-1932	Safety Rules for Installing and Using Electrical Equipment in Metal Mines	gratis

O—WOOD INDUSTRY

O1-1930	Woodworking Plants, Safety Code for (Lab. Stat. Bull. 519)	Under revision—Out of print
O3-1926	Cross-ties and Switch-ties, Specifications for	.25
O4a-1927	Small Clear Specimens of Timber, Methods of Testing (ASTM D143-27)	.25
O4b-1927	Static Tests of Timbers in Structural Sizes, Methods of Conducting (ASTM D198-27)	.25
O5a-1933	Ultimate Fiber Stresses of Wood Poles	.10
O5.1-1941	Northern White Cedar Poles, Specifications and Dimensions for	.20

(See beginning for list of abbreviations and keying)

		Price
05.2-1941	Western Red Cedar Poles, Specifications and Dimensions for	.20
05.3-1941	Chestnut Poles, Specifications and Dimensions for	.20
05.4-1941	Southern Pine Poles, Specifications and Dimensions for	.20
05.5-1941	Lodgepole Pine Poles, Specifications and Dimensions for	.20
05.6-1941	Douglas Fir Poles, Specifications and Dimensions for	.20
06-1939	Round Timber Piles, Specifications for (ASTM D25-37)	.25
07-1939	Structural Wood Joist and Plank, Beams and Stringers, and Posts and Timbers, Specifications for (ASTM D245-37)	.25
	P—PULP AND PAPER INDUSTRY	
P1-1936	Paper and Pulp Mills, Safety Code for	.25
	Z—MISCELLANEOUS	
Z1.1-1941	★Guide for Quality Control	
Z1.2-1941	★Control Chart Method of Analysing Data (Two American Defense Emergency Standards published in one pamphlet)	.75
Z2-1938	Protection of Heads, Eyes and Respiratory Organs (Bur. Stds. Handbook 24)	.15
Z4.1-1935	Industrial Sanitation in Manufacturing Establishments, Safety Code for	.25
Z4.2-1942	★Drinking Fountains	.10
Z4.3-1935	Sanitary Privy (Supplement Number 108 to the Public Health Reports)	.10
Z7-1932	Illuminating Engineering Nomenclature and Photometric Standards .... **Under revision—Out of print**	
Z8-1941	Laundry Machinery and Operations, Safety Code for (Lab. Stat. Bull. 375)	.05
*Z9	Fundamentals Relating to the Design and Operation of Exhaust Systems (preliminary edition) ...	.40
Z9.1-1941	★Safety in Electroplating Operations	.30
	Symbols and Abbreviations	
Z10a-1932	See Z10.3-1942	
Z10b-1929	See Z10.2-1942	
Z10c-1931	Heat and Thermodynamics, Symbols for	.30
Z10d-1930	Photometry and Illumination, Symbols for	.20
Z10e-1930	Aeronautical Symbols	.35
Z10f-1928	Mathematical Symbols **Under revision—Out of print**	
Z10g1-1929	Electrical Quantities, Letter Symbols for (AIEE 17g1-1928)	.20
Z10g2-1933	Electric Power and Wiring, Graphical Symbols Used for (AIEE 17g2-1934)	.20
Z10g3-1933	Radio, Graphical Symbols Used for (AIEE 17g3-1934)	.20
Z10g5-1933	Electric Traction Including Railway Signaling, Graphical Symbols Used for (AIEE 17g5-1934)	.40
Z10g6-1929	Telephone and Telegraph Use, Graphical Symbols for (AIEE 17g6-1929)	.20
Z10.1-1941	Abbreviations for Scientific and Engineering Terms	.35
Z10.2-1942	★Letter Symbols for Hydraulics (supersedes Z10b-1929) ..... **In press**	
Z10.3-1942	★Letter Symbols for Mechanics of Solid Bodies (supersedes Z10a-1932) ..... **In press**	

*Entries listed without a date are **Proposed American Standards** or **Proposed American Recommended Practices** that are available at the prices indicated, pending final approval. Comments or criticisms are welcome.

		Price
	Petroleum Products	
Z11.1-1936	Standard Abridged Volume Correction Table for Petroleum Oils (ASTM D206-36; API 500-36) ...	.25
Z11.2-1938	Viscosity by Means of the Saybolt Viscosimeter, Method of Test for (ASTM D88-38; API 518-38) ...	.25
Z11.4-1937	Melting Point of Paraffin Wax, Method of Test for (ASTM D87-37; API 513-37)	.25
Z11.5-1939	Cloud and Pour Points, Method of Test for (ASTM D97-39) (API No. 506-39)	.25
Z11.6-1933	Flash and Fire Points by Means of Open Cup, Method of Test for (ASTM D92-33; API 511-33) ...	.25
Z11.7-1940	Flash Point by Means of the Pensky-Martens Closed Tester, Method of Test for (ASTM D93-40; API 510-40)	.25
Z11.8-1940	Water and Sediment in Petroleum Products by Means of Centrifuge, Method of Test for (ASTM D96-40; API 520-40)	.25
Z11.9-1940	Water in Petroleum Products and Other Bituminous Materials, Method of Test for (ASTM D95-40; API 519-40)	.25
Z11.10-1940	Distillation of Gasoline, Naptha, Kerosine and Similar Petroleum Products, Method of Test for (ASTM D86-40; API 507-40) ...	.25
Z11.11-1940	Distillation of Natural Gasoline, Method of Test for (ASTM D216-40; API 508-40)	.25
Z11.13-1939	Sulfur in Petroleum Oils by Bomb Method, Method of Test for (ASTM D129-39) (API No. 516-39)	.25
Z11.14-1939	Thermal Value of Fuel Oil, Method of Test for (ASTM D240-39) (API No. 517-39)	.25
Z11.15-1936	Steam Emulsion of Lubricating Oils, Method of Test for (ASTM D157-36; API 515-36)	.25
Z11.16-1940	Analysis of Grease, Methods of (ASTM D128-40; API 501-40) ..	.25
Z11.17-1939	Burning Quality of Kerosine Oils, Method of Test for (ASTM D187-39) (API No. 502-39)	.25
Z11.18-1930	Burning Quality of Mineral Seal Oil, Method of Test for (ASTM D239-30; API 504-30)	.25
Z11.19-1936	Burning Quality of Long-Time Burning Oil for Railway Use, Method of Test for (ASTM D219-36; API 503-36)	.25
Z11.21-1930	Detection of Free Sulfur and Corrosive Sulfur Compounds in Gasoline, Method of Test for (ASTM D130-30; API 521-30)	.25
Z11.22-1932	Melting Point of Petrolatum, Method of Test for (ASTM D127-30; API 523-30)	.25
Z11.23-1932	Determination of Autogenous Ignition Temperatures, Method of Test (ASTM D286-30; API 522-30)	.25
Z11.24-1936	Flash Point by Means of the Tag Closed Tester, Method of Test for (ASTM D56-36; API 509-36) ...	.25
Z11.25-1941	★Carbon Residue of Petroleum Products (Conradson Carbon Residue), Method of Test for (ASTM D189-41) (API No. 505-41)	.25
Z11.26-1941	★Distillation of Gas Oil and Similar Distillate Fuel Oils, Method of Test for (ASTM D158-41) (API No. 512-41	.25
Z11.29-1935	Dilution of Crankcase Oils, Method of Test (ASTM D322-35; API 524-35)	.25

(See beginning for list of abbreviations and keying)

		Price
Z11.30-1940	Precipitation Number of Lubricating Oils, Method of Test for (ASTM D91-40; API 527-40) ...	.25
Z11.31-1939	Gravity of Petroleum and Petroleum Products by Means of the Hydrometer, Method of Test for (ASTM D287-39) (API No. 526-39)	.25
Z11.32-1941	★Distillation of Crude Petroleum, Method of Test for (ASTM D285-41) (API No. 525-41)	.25
Z11.33-1935	Sampling Petroleum and Petroleum Products, Standard Methods of (ASTM D270-33; API 528-33)	.25
Z11.35-1938	Color of Refined Petroleum Oil by Means of Saybolt Chromometer, Method of Test (ASTM D156-38)	.25
Z11.36-1936	Gum Content of Gasoline, Method of Test for (ASTM D381-36; API 529-36)	.25
Z11.37-1940	Knock Characteristics of Motor Fuels, Method of Test for (ASTM D357-40) (API No. 532-40)	Withdrawn
Z11.39-1939	Viscosity-Temperature Charts for Liquid Petroleum Products (ASTM D341-39) (with three charts)	.75
Z11.41-1940	Unsulfonated Residue of Plant Spray Oils, Method of Test for (ASTM D483-40; API 536-40) ..	.25
Z11.42-1940	Stoddard Solvent, Specifications for (ASTM D484-40; API 537-40)	.25
Z11.43-1941	★Distillation of Plant Spray Oils, Method of Test for (ASTM D447-41) (API No. 538-41)	.25
Z11.44-1941	★Vapor Pressure of Petroleum Products (Reid Method), Method of Test for (ASTM D323-41) (API No. 539-41)	.25
Z11.45-1941	★Calculating Viscosity Index, Method for (ASTM D567-41) (API No. 540-41)	.25
Z11.46-1941	★Conversion of Kinematic Viscosity to Saybolt Universal Viscosity, Method for (ASTM D446-39) (API No. 534-41)	.25
	Dust Explosions	
Z12.1-1940	Installation of Pulverized Fuel Systems, Safety Code for	.75
Z12.2-1940	Prevention of Dust Explosions in Starch Factories, Safety Code for	
Z12.3-1940	Prevention of Dust Explosions in Flour and Feed Mills, Safety Code for	
Z12.4-1940	Prevention of Dust Explosions in Terminal Grain Elevators, Safety Code for	
Z12.5-1940	Prevention of Dust Explosions in Woodworking Plants, Safety Code for	
Z12.6-1940	Pulverizing Systems for Sugar and Cocoa, Safety Code for	
Z12.7-1940	Prevention of Dust Explosions in Coal Pneumatic Cleaning Plants, Safety Code for	
Z12.8-1940	Prevention of Dust Explosions in Wood Flour Manufacturing Establishments, Safety Code for ...	
Z12.9-1940	Prevention of Dust Ignitions in Spice Grinding Plants, Safety Code for	
Z12.10-1940	Use of Inert Gas for Fire and Explosion Prevention, Safety Code for	
Z12.11-1940	Prevention of Dust Explosions in the Manufacture of Aluminum Bronze Powder, Safety Code for	

(Above publication of the National Fire Protection Association supersedes all safety codes which were included in Lab. Stat. Bull. 562 and Supplement 617)

Z11.28-1939	Terms Relating to Petroleum, Definitions of (ASTM D288-39) (API No. 535-39)	.25

		Price
Z14.1-1935	Drawings and Drafting Room Practice	.50
Z14.2-1935	See Z32.2-1941	
Z15.1-1932	Engineering and Scientific Charts for Lantern Slides	.50
Z15.2-1938	Time-Series Charts, a Manual of Design and Construction	1.25
Z16.1-1937	Industrial Injury Rates, Method of Compiling	.20
Z16.2-1941	★Compiling Industrial Accident Causes	
	Part 1—Selection of Accident Factors	
	Part 2 — Detailed Classification of Accident Factors	1.00
Z17.1-1936	Preferred Numbers	.25
Z20.1-1941	Portable Steel and Wood Grandstands, Specifications for	.60
	Gas-Burning Appliances, Approval and Installation Requirements	
Z21.1-1940	Domestic Gas Ranges, Approval Requirements for	1.00
Z21.2-1938	Flexible Gas Tubing, Listing Requirements for	.40
Z21.3-1940	Hotel and Restaurant Ranges and Unit Broilers, Approval Requirements for	1.00
Z21.4-1932	Private Garage Heaters, Approval Requirements for	.40
Z21.5-1940	Gas Clothes Dryers, Approval Requirements for	1.00
Z21.6-1932	Incinerators, Approval Requirements for	.40
Z21.7-1932	Gas Heated Ironers, Approval Requirements for	.40
Z21.8-1940	Installation of Conversion Burners in House Heating and Water Heating Appliances, Approval Requirements for	.50
Z21.9-1940	Hot Plates and Laundry Stoves, Approval Requirements for	.50
Z21.10-1941	★Gas Water Heaters, Approval Requirements for	1.00
Z21.11-1940	Gas Space Heaters, Approval Requirements for	1.00
Z21.12-1937	Draft Hoods, Listing Requirements for	.50
Z21.13-1940	Central Heating Gas Appliances, Approval Requirements for (Eighth edition and addendum) ..	1.20
Z21.14-1934	Industrial Gas Boilers, Approval Requirements for	.40
Z21.15-1934	Gas Burner Valves, Listing Requirements for	.30
Z21.16-1940	Gas Unit Heaters, Approval Requirements for	1.00
Z21.17-1940	Gas Conversion Burners, Listing Requirements for	.50
Z21.18-1934	Domestic Gas Appliance Pressure Regulators, Listing Requirements for	.30
Z21.19-1936	Refrigerators Using Gas Fuel, Approval Requirements for	.40
Z21.20-1940	Automatic Pilots, Listing Requirements for	.50
Z21.21-1935	Automatic Main Gas-Control Valves, Listing Requirements for	.30
Z21.22-1935	Relief and Automatic Gas Shut-off Valves for Use on Water Heating Systems, Listing Requirements for	.40
Z21.23-1940	Gas Appliance Thermostats, Listing Requirements for	.50
Z21.24-1941	Semi-Rigid Gas Appliance Tubing and Fittings, Listing Requirements for	.50
Z21.25-1937	Gas Hair Dryers, Approval Requirements for	1.00
Z21.26-1941	★Attachable Gas Water Heating Units, Listing Requirements for ..	1.00
Z21.27-1940	Hotel and Restaurant Deep Fat Fryers, Approval Requirements for	1.00

(See beginning for list of abbreviations and keying)

		Price
Z21.28-1941	Portable Gas Baking and Roasting Ovens, Approval Requirements for	1.00
Z21.29-1941	Furnace Temperature Limit Controls and Fan Cantrols, Listing Requireemnts for	.50
Z21.31-1941	★Gas Counter Appliances, Approval Requirements for	1.00

Motion Pictures

American Standard

Z22.2-1941	35 mm Sound Film; Emulsion and Sound Record Position in Camera—Negative	
Z22.3-1941	35 mm Sound Film; Emulsion and Sound Record Positions in Projector—Positive. For Direct Front Projection	
Z22.4-1941	35 mm Film; Projector Reels	
Z22.5-1941	16 mm Silent Film; Cutting and Perforating Negative and Positive Raw Stock	
Z22.6-1941	16 mm Film; Projector Sprockets	
Z22.7-1941	16 mm Silent Film; Camera Aperture	
Z22.8-1941	16 mm Silent Film; Projector Aperture	
Z22.9-1941	16 mm Silent Film; Emulsion Position in Camera—Negative	
Z22.10-1941	16 mm Silent Film; Emulsion Position in Projector—Positive. For Direct Front Projection	
Z22.11-1941	16 mm Film; Projection Reels	
Z22.12-1941	16 mm Sound Film; Cutting and Perforating Negative and Positive Raw Stock	
Z22.13-1941	16 mm Sound Film; Camera Aperture	
Z22.14-1941	16 mm Sound Film; Projector Aperture	
Z22.15-1941	16 mm Sound Film; Emulsion and Sound Record Positions in Camera—Negative	
Z22.16-1941	16 mm Sound Film; Emulsion and Sound Record Positions in Projector—Positive	.50
Z22.17-1941	8 mm Film, Cutting and Perforating Negative and Positive Raw Stock	
Z22.18-1941	8 mm Film; 8 Tooth Projector Sprockets	
Z22.19-1941	8 mm Silent Film; Camera Aperture	
Z22.20-1941	8 mm Silent Film; Projector Aperture	
Z22.21-1941	8 mm Silent Film; Emulsion Position in Camera—Negative	
Z22.22-1941	8 mm Silent Film; Emulsion Position in Projector—Positive. For Direct Front Projection	
Z22.23-1941	8 mm Silent Film; Projection Reels	

American Recommended Practice

Z22.24-1941	16 mm Silent Film; Film Splices—Negative and Positive	
Z22.25-1941	16 mm Sound Film; Film Splices—Negative and Positive	
Z22.26-1941	Sensitometry	
Z22.27-1941	Photographic Density	
Z22.28-1941	Projection Rooms	
Z22.29-1941	Projection Screens	
Z22.30-1941	Nomenclature	
Z22.31-1941	Safety Film	
Z22.32-1941	Fader Setting Instructions	
Z22.33-1941	Nomenclature for Filters	

American Standard

Z22.34-1930	35 mm Cutting and Perforating Negative and Positive Raw Stock	
Z22.35-1930	35 mm Projector Sprockets	
Z23.1-1939	Sieves for Testing Purposes, Specifications for (ASTM E11-39)	.25

		Price
Z24.1-1936	Acoustical Terminology	.25
Z24.2-1936	Noise Measurement	.25
Z24.3-1936	Sound Level Meters for Measurement of Noise and other Sounds.	.25
Z24.4-1938	Calibration of Microphones	.25
Z25.1-1940	Rules for Rounding Off Numerical Values	.20
Z26.1-1938	Safety Glass for Glazing Motor Vehicles Operating on Land Highways	.20
Z27-1933	City Gas, Recommended Practice for the Installation, Maintenance and Use of Piping and Fittings for	.35
Z29.1-1935	Periodicals, Reference Data for	.15
Z30.2-1936	Thermal Analysis of Steel, Recommended Practice for (ASTM E14-33)	.25
Z31-1933	Marking of Gold Filled and Rolled Gold Plate Articles Other than Watchcases (CS47-34)	.05
Z32.2-1941	★Graphical Symbols for Use on Drawings (supersedes Z14.2-1935)	.50
Z33.1-1938	Regulations for the Installation of Blower and Exhaust Systems for Dust, Stock and Vapor Removal (NBFU No. 91)	.15
Z35.1-1941	Accident Prevention Signs, Specifications for	.35
Z37.1-1941	Carbon Monoxide, Allowable Concentration of	.20
Z37.2-1941	Hydrogen Sulfide, Allowable Concentration of	.20
Z37.3-1941	Carbon Disulfide, Allowable Concentration of	.20
Z37.4-1941	Benzene, Allowable Concentration of	.20
Z37.5-1941	★Cadmium, Allowable Concentration of (American Defense Emergency Standard)	.20
Z38.1.1-1941	★Film Pack Tabs and Films, Dimensions for	.10
Z38.1.2-1941	★Film Pack Cases, Dimensions for	.10
Z38.1.3-1941	★70 mm Perforated (and Unperforated) Film for Other Than Motion Picture Purposes (Cutting and Perforating Standard), Dimensions for	.10
*Z38.2.1	Determining Photographic Speeds of Roll Films, Film Packs and Miniature Camera Films, Proposed American Standard Specifications for	.25
*Z38.7.1	Printing Equipment (Contact Printing Machines, Printing Frames, and Masks), Proposed American Standard for	.10
*Z38.7.2	Projection Equipment (Film Strip Projectors, Viewing Devices for 35 mm Film and Reading Devices for Microfilm), Proposed American Standard for	.10
*Z38.7.3	Lantern Slide Projectors (exclusive of Microfilm Readers), Proposed American Standard for	.10
*Z38.7.4	Opaque Projectors for Written or Printed Matter and Pictures, Proposed American Standard for	.10
*Z38.7.5	Testing Printing and Projection Equipment, Proposed American Standard Methods of	.10
*Z38.7.6	★Photographic Printing Machines, Proposed American Standard for	.10
*Z38.7.7	★Photographic Printing Machines, Proposed Recommended Practice for	.10

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(See beginning for list of abbreviations and keying)

		Price
Z43-1941	*Grinding, Polishing and Buffing Equipment Sanitation	.60

THE FOLLOWING COMMERCIAL STANDARDS HAVE BEEN APPROVED BY THE ASA

CS49-34	Chip Board, Laminated Chip Board, and Miscellaneous Boards for Book Binding Purposes	.05
CS50-34	Binders Board	.05
CS51-35	Marking Articles Made of Silver in Combination With Gold	.05
CS53-35	Colors and Finishes for Cast Stone	.05
CS54-35	Mattresses for Hospitals	.05
CS55-35	Mattresses for Institutions	.05
CS57-40	Book Cloths, Buckrams and Impregnated Fabrics for Bookbinding Purposes except Library Bindings	.05
CS67-38	Marking Articles Made of Karat Gold	.05

AMERICAN DEFENSE EMERGENCY STANDARDS

B5.16-1941	Accuracy of Engine Lathes	.25
Z1.1-1941	Guide for Quality Control	
Z1.2-1941	Control Chart Method of Analysing Data (Two standards published in one pamphlet)	.75
Z37.5-1941	Allowable Concentration of Cadmium	.20

AMERICAN SAFETY STANDARDS

A2-1934	Fire Tests of Building Construction and Materials (ASTM C19-33)	.25
A9-1940	Building Exits Code	Under revision
A10.1-1939	Manual of Accident Prevention in Construction	2.00
A11-1930	Lighting Factories, Mills and Other Work Places, Code of	In press
A12-1932	Floor and Wall Openings, Railings and Toe Boards, Safety Code for	.20
A13-1928	Identification of Piping Systems, Scheme for	.50
A14-1935	Ladders, Safety Code for Construction, Care and Use of	.25
A17.1-1937	Elevators, Dumbwaiters and Escalators, Safety Code for	1.00
A17.2-1937	Inspection of Elevators, Recommended Practice for (Inspectors Manual)	.75
A23-1938	School Lighting, Standards of	.25
A39-1933	Window Cleaning, Safety Code for	.20
B7-1935	Abrasive Wheels, Safety Code for the Use, Care and Protection of	.10
B8-1932	Protection of Industrial Workers in Foundries, Safety Code for	.20
B9-1939	Mechanical Refrigeration, Safety Code for (ASRE Circular No. 15)	.20
B11-1937	Power Presses and Foot and Hand Presses, Safety Code for	.50
B13-1924	Logging and Sawmill Safety Code (Bur. Stds. Handbook 5)	Under revision—Out of print
B15-1927	Mechanical Power Transmission Apparatus, Safety Code for	.35
B19-1938	Compressed Air Machinery and Equipment, Safety Code for	.30
B24-1927	Safety Code for Forging and Hot Metal Stamping	Under revision—Out of print
B28a-1927	Rubber Mills and Calenders, Safety Code for (Lab. Stat. Bull. 447)	.05
C1-1940	National Electrical Code (NBFU Pamphlet No. 70)	.05
C2	National Electrical Safety Code	(Sold separately—See below)
C2.1-1941	Safety Rules for the Installation and Maintenance of Electrical Supply Stations (Bur. Stds. Handbook 31)	.10
C2.2-1941	Safety Rules for the Installation and Maintenance of Electric Supply and Communication Lines (Bur. Stds. Handbook 32—Supersedes Handbook 10)	.65
C2.3-1941	Safety Rules for the Installation and Maintenance of Electric Utilization Equipment (Bur. Stds. Handbook 33)	.15
C2.4-1939	Safety Rules for the Operation of Electric Equipment and Lines (Bur. Stds. Handbook 34)	.10
C2.5-1940	Safety Rules for Radio Installations (Bur. Stds. Handbook 35)	.10
C5	Code for Protection Against Lightning	
C5.1-1937	Part I, Protection of Persons	
C5.2-1937	Part II, Protection of Buildings and Miscellaneous Property	.15
C5.3-1937	Part III, Protection of Structures Containing Inflammable Liquids and Gases (Bur. Stds. Handbook 21)	
D3-1927	Colors for Traffic Signals, Safety Code for	.25
D6-1935	Manual on Uniform Traffic Control Devices for Streets and Highways	.50
D7.1-1941	Inspection Requirements for Motor Vehicles (supersedes D7-1939)	.25
D8-1937	Railroad Highway Grade Crossing Protection (AAR Bulletin No. 2)	.10
K2-1927	Gas Safety Code	.20
K13-1930	Gas-Mask Canisters, Code for Identification (Lab. Stat. Bull. 512)	.05
L1-1929	Textile Safety Code (Lab. Stat. Bull. 509)	.05
M2-1926	Installing and Using Electrical Equipment in Coal Mines, Safety Rules for (Bur. Mines TP402)	Out of print
M10-1928	Miscellaneous Outside Coal Handling Equipment, Recommended Practice for	Out of print
M11-1927	Wire Rope for Mines, Specifications and Recommended Practice in Use at Mines	.25
M12-1928	Ladders and Stairs for Mines, Construction and Maintenance of	.25
M13-1925	Rock Dusting Coal Mines to Prevent Coal Dust Explosions, Recommended Practice for	.25
M14-1930	Explosives in Bituminous Coal Mines, Recommended Practice for the Use of	.25
M15-1931	Coal Mine Transportation, Safety Code for	.20
M17-1930	Fire Fighting Equipment in Metal Mines (mimeographed)	gratis
M24-1932	Safety Rules for Installing and Using Electrical Equipment in Metal Mines	gratis
O1-1930	Woodworking Plants, Safety Code for (Lab. Stat. Bull. 519)	Under revision—Out of print
P1-1936	Paper and Pulp Mills, Safety Code for	.25
Z2-1938	Protection of Heads, Eyes and Respiratory Organs (Bur. Stds. Handbook 24)	.15
Z4.1-1935	Industrial Sanitation in Manufacturing Establishments, Safety Code for	.20
Z4.2-1942	Drinking Fountains	.10
Z4.3-1935	Sanitary Privy (Supplement Number 108 to the Public Health Reports)	.10

(See beginning for list of abbreviations and keying)

		Price
Z8-1941	Laundry Machinery and Operations, Safety Code for (Lab. Stat. Bull. 375)	.05
*Z9	Fundamentals Relating to the Design and Operation of Exhaust Systems (preliminary edition)	.40
Z9.1-1941	Safety in Electroplating Operations	.30
Z12.1-1940	Installation of Pulverized-Fuel Systems, Safety Code for	.75
Z12.2-1940	Prevention of Dust Explosions in Starch Factories, Safety Code for	
Z12.3-1940	Prevention of Dust Explosions in Flour and Feed Mills, Safety Code for	
Z12.4-1940	Prevention of Dust Explosions in Terminal Grain Elevators, Safety Code for	
Z12.5-1940	Prevention of Dust Explosions in Woodworking Plants, Safety Code for	
Z12.6-1940	Pulverizing Systems for Sugar and Cocoa, Safety Code for	
Z12.7-1940	Prevention of Dust Explosions in Coal Pneumatic Cleaning Plants, Safety Code for	
Z12.8-1940	Prevention of Dust Explosions in Wood Flour Manufacturing Establishments, Safety Code for	
Z12.9-1940	Prevention of Dust Ignitions in Spice Grinding Plants, Safety Code for	
Z12.10-1940	Use of Inert Gas for Fire and Explosion Prevention, Safety Code for	
Z12.11-1940	Prevention of Dust Explosions in the Manufacture of Aluminum Bronze Powder, Safety Code for	

(Above publication of the National Fire Protection Association supersedes all safety codes which were included in Lab. Stat. Bull. 562 and Supplement 617)

		Price
Z16.1-1937	Industrial Injury Rates, Method of Compiling	.20
Z16.2-1941	Compiling Industrial Accident Causes	
	Part 1—Selection of Accident Factors	
	Part 2 — Detailed Classification of Accident Factors	1.00
Z20.1-1941	Portable Steel and Wood Grandstands, Specifications for	.60
Z26.1-1938	Safety Glass for Glazing Motor Vehicles Operating on Land Highways	.20
Z33.1-1938	Regulations for the Installation of Blower and Exhaust Systems for Dust, Stock and Vapor Removal (NBFU No. 91)	.15
Z35.1-1941	Accident Prevention Signs, Specifications for	.35
Z37.1-1941	Carbon Monoxide, Allowable Concentration of	.20
Z37.2-1941	Hydrogen Sulfide, Allowable Concentration of	.20
Z37.3-1941	Carbon Disulfide, Allowable Concentration of	.20
Z37.4-1941	Benzene, Allowable Concentration of	.20
Z37.5-1941	Cadmium, Allowable Concentration of (American Defense Emergency Standard)	.20
Z43-1941	Grinding, Polishing and Buffing Equipment Sanitation	.60

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INDEX TO AMERICAN STANDARDS

(See beginning for list of abbreviations and keying)

(See beginning for list of abbreviations and keying)

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